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RESEARCH MEMORANDUM

PRESSURE DISTRIBUTIONS ON TRIANGULAR AND RECTANGULAR WINGS TO HIGH ANGLES OF ATTACK - MACH NUMBERS 2.46 AND 3.36

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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

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PRESSURE DISTRIBUTIONS ON TRIANGULAR AND RECTANGULAR WINGS TO HIGH ANGLES OF ATTACK - MACH NUMBERS 2.46 AND 3.36

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SUMMARY

In order to provide detailed wing-load-distribution data to high angles of attack, semispan pressure-distribution models of triangular and rectangular plan forms were tested initially at Mach numbers 1.45 and 1.97. The results of these tests were presented in NACA RM A54D19. The present report presents the results of tests on the same models conducted at Mach number 2.46 within the angle-of-attack range of 0° to 50° and at Mach number 3.36 within the angle-of-attack range of 0° to 45°. The tests were made at Reynolds numbers of 0.26×10^6 per inch and 0.44×10^6 per inch for Mach number 2.46 and at Reynolds number of 0.85×10^6 per inch for Mach number 3.36.

Data were obtained on five models. The three basic models were two triangular wings of aspect ratios 2 and 4 and one rectangular wing of aspect ratio 2, all having thickened root sections, a structural feature generally required for supersonic all-movable wings. To evaluate the possible aerodynamic penalty of thickening the root sections, two other aspect-ratio-2 models, identical to two of the basic models but without thickened root sections, were tested.

The triangular wings showed a tendency toward uniform loading for angles of attack up to 40°. Thus, as the angle was increased, the center of pressure moved toward the centroid of area. The pressure distribution in the two-dimensional flow region of the rectangular wing was in fair accord with the values given by shock-expansion theory up to the angle of shock detachment. The presence of thickened root sections on the wings had little effect on the centers of pressure and normal-force coefficients. Reynolds number effects were negligible in the angle-of-attack range of 0° to 30°.

INTRODUCTION

Since wings and controls for supersonic interceptor aircraft maneuvering at high altitudes are required to operate over a wide range of angles of attack, information is required on wing-load distribution at large as well as small angles of attack. Unfortunately, available theory on the aerodynamic behavior of wing and wing-body configurations at supersonic speeds is restricted to cases where the angle of attack is small. Detailed pressure-distribution data on wing-body components available in the literature (e.g., refs. 1 to 3) are also generally limited to small angles of attack. Little data are available for high angles of attack at supersonic speeds, particularly for wing-body models with variable-incidence wings. In an effort to provide the needed information, a program has been initiated to measure pressure distributions through a wide range of angles of attack, both on wing-body combinations and on the components (wing and body). It is hoped that the data obtained will not only provide needed design information, but will also point the way for development of theories applicable over a wide range of angles of attack.

Five low-aspect-ratio wings of triangular and rectangular plan form were chosen for the initial experimental investigation. Pressure distributions on these wings through a wide range of angles of attack at Mach numbers of 1.45 and 1.97 were presented in reference 4. The present report presents similar data for Mach numbers of 2.46 and 3.36. Specifically, the data are presented in the form of: (1) tabulated pressure coefficients, (2) span-load-distribution curves for each angle of attack, (3) curves of normal force as a function of angle of attack, and (4) curves of center-of-pressure position as a function of angle of attack.

NOTATION

A wing aspect ratio

C_m pitching-moment coefficient, $\dfrac{C_N(x_h - \bar{x})}{\bar{c}}$

C_N normal-force coefficient, $\dfrac{N}{qS}$

c local chord, in.

c_n local normal-force coefficient

c_r root chord, in.

$\bar{c}$ mean aerodynamic chord, $\dfrac{\int_0^s c^2 dy}{\int_0^s c\ dy}$, in.

cc_n	span loading coefficient, in.
M	free-stream Mach number
N	normal force, lb
P	pressure coefficient, $\frac{p - p_o}{q}$
p	orifice static pressure, lb/sq in.
p_o	free-stream static pressure, lb/sq in.
p_w	reference static pressure, lb/sq in.
q	free-stream dynamic pressure, lb/sq in.
R	Reynolds number, per in.
s	wing semispan, in.
S	wing area, in.^{2}
W	wing (Subscript denotes model.)
x	chordwise distance from leading edge at spanwise distance y, in.
x_h	distance from leading edge to hinge line along root chord, in.
$\bar{x}$	distance from leading edge to wing center of pressure along root chord, in.
y	spanwise distance from root chord, in.
$\bar{y}$	distance from root chord to wing center of pressure, in.
α	angle of attack, deg

APPARATUS

Wind Tunnels

The investigation at $M = 2.46$ was conducted in the Ames 1- by 3-foot supersonic wind tunnel No. 1. This single-return, continuous operation, variable-pressure wind tunnel has a Mach number range of 1.2

to 2.5. The investigation at M = 3.36 was conducted in the Ames 1- by 3-foot supersonic wind tunnel No. 2. This intermittent-operation, non-return, variable-density wind tunnel has a Mach number range of 1.2 to 4.0. In both tunnels, the Mach number is changed by varying the contour of flexible plates which comprise the top and bottom walls of the tunnels.

Models

The models and methods of mounting are identical to those of reference 4. The five semispan models consisting of three triangular wings and two rectangular wings were constructed of hardened steel. A sketch identifying the models and a tabulation of their dimensions are presented in figure 1. Two triangular wings (aspect ratios 2 and 4) and one rectangular wing (aspect ratio 2) incorporated thickened root sections faired to integral hinge shaft extensions, since such thickening is generally required for supersonic all-movable wings to maintain structural integrity between the comparatively thin wing and a large hinge shaft. In order to assess the aerodynamic penalty of thickening the root sections, two of these wings, one triangular and one rectangular, both of aspect ratio 2, were duplicated in plan form but had unthickened root sections and were provided with integral mounting flanges at their root chords. All wing sections in vertical streamwise planes were modified biconvex with maximum thickness ratios of 5 percent at midchord and with 50-percent-blunt trailing edges. Tubing was soldered into milled grooves on one surface of the wings and orifice holes were drilled from the opposite surface to communicate with the tubes at locations listed in table I in terms of spanwise and chordwise positions, y/s and x/c.

The wings were mounted on a boundary-layer plate serving both as a flow reflection plane and as a means of placing the wings in a region free of the tunnel-wall boundary layer. The thickened-root wings were supported by their hinge shafts which fitted through a bearing in the boundary-layer plate. A clearance gap of 0.005 to 0.009 inch was allowed between these models and the boundary-layer plate to permit free rotation. The unthickened-root wings were mounted on a turntable in the boundary-layer plate.

TESTS AND PROCEDURE

Range of Test Variables

All models were tested at Mach numbers of 2.46 and 3.36. Although angles of attack up to 90° were investigated, data are presented for a more limited range since it was felt that the results at the higher angles may be inaccurate due to the effects of interaction between the plate boundary layer and the leading-edge shock wave of the wings and to the tendency for the models to vibrate beyond 60° angle of attack. The maximum angles of attack for which data are presented are therefore limited to 30° to 50°, depending on the plan form, Mach number, Reynolds number, and model structural rigidity. The models were tested at $R = 0.44 \times 10^6$ per inch and 0.26×10^6 per inch at Mach number 2.46. The models were tested at only one Reynolds number (0.85×10^6 per inch) at Mach number 3.36.

Reduction of Data

The local pressures were reduced to the pressure coefficient P as shown by the following expression:

$$P = \frac{p - p_o}{q} = \frac{p - p_W}{q} + \frac{p_W - p_o}{q}$$

where the term $(p - p_W)/q$ is calculated directly from the test data and $(p_W - p_o)/q$ is obtained from a calibration of the wind-tunnel air stream. Calibration of the air stream indicated that the value of $(p_W - p_o)/q$ at $M = 2.46$ was essentially 0, but that at $M = 3.36$ it was approximately 0.01.

Chordwise pressure distributions were integrated for each span station by a tabular method to give local span loading coefficient cc_n and local center of pressure $\bar{x}/c$. The absence of orifices at the leading and trailing edges of the wings required extrapolations of the pressure distribution to these points. Linear extrapolations were used, based, respectively, on the pressures measured at the first two and last two orifices of each span station. The spanwise load distributions were similarly integrated to give total load C_N and center-of-pressure location $\bar{x}/c_r$ and $\bar{y}/s$. The span loadings beyond the most outboard station of the models were approximated by assuming a parabolic load distribution tangent to the slope passing through the loading of the last two outboard stations and falling to zero at the tip.

Validity of Data

The validity of the data is affected by measuring accuracy and to an undetermined extent, at the highest angles of attack, by plate-boundary-layer interference. The slight variations from constant test conditions and inaccuracies in setting the model angle of attack caused a probable error of less than ±0.02 in the pressure coefficients at both Mach numbers. The effect of the boundary-layer plate on the semispan models was discussed in reference 4 wherein it was noted that the root-chord pressure distribution of the unthickened-root rectangular wing compared well with those predicted by shock-expansion theory at Mach numbers 1.45 and 1.97. Good agreement indicated that the boundary-layer plate had little effect at the root chord below the angle of shock detachment. The pressure distribution at the most inboard spanwise station $y/s = 0.025$ was also in good agreement with theory below the angle of shock detachment for Mach numbers 2.46 and 3.36. The only consistent indication of boundary-layer-plate effects was evident in the case of the aspect-ratio-4 triangular wing when tested at Mach number 2.46 for angles of attack above 25°. A reduction of about eight percent in the span loading at the root chord occurred when the Reynolds number was reduced from $0.44{\times}10^{6}$ per inch to $0.26{\times}10^{6}$ per inch. It is not clear why the other plan forms do not show corresponding Reynolds number effects at the root chord. The accuracy of the data for angles of attack above 40°, and those for wing 2 at angles above 25° at Reynolds number $0.26{\times}10^{6}$ per inch, are subject to some uncertainty.

RESULTS

Tabulations of pressure coefficients are presented for the models at $M = 2.46$ for $R = 0.44{\times}10^{6}$ per inch and at $M = 3.36$ for $R = 0.85{\times}10^{6}$ per inch in tables I(a) to I(j). The contributions to the loading and to center of pressure for each spanwise station are presented in tables II(a) to II(j) for both upper and lower wing surfaces. Summarized in tables II for each wing are also the normal-force coefficients, the center-of-pressure locations, and moment coefficients about the wing centroid of area. Figures 2 to 6 present plots of span loading coefficients, normal-force coefficients, and the center-of-pressure positions for each wing. Data taken at $R = 0.26{\times}10^{6}$ per inch at $M = 2.46$ are shown on these plots for comparison. Plotted on part (b) of figures 2 to 6 are also the values for the normal-force coefficients as predicted by linear theory.

DISCUSSION

Angle-of-Attack Effects

It was noted in reference 4 that all five wings tested at Mach numbers 1.45 and 1.97 tended toward a uniform loading with increasing angle of attack. This was also found to be the case for the loadings on the same wings at the higher Mach numbers of the present test up to the angle of attack of 40°. However, on all wings tested beyond 40°, the pressures on the root chord decreased somewhat with a consequent movement of the center-of-pressure position outward and toward the trailing edge. This phenomenon is believed to be the result of interference between the bow shock and the plate boundary layer. The rectangular wing data are in fair accord with shock-expansion theory in the two-dimensional flow region up to the angle of shock detachment (fig. 7).

Mach Number Effects

On the basis of the data of the present report and of reference 4, wherein data on the same models were presented for $M = 1.45$ and 1.97, the following Mach number effects were evident. As would be expected the normal-force curve slope at low angles decreased with increasing Mach numbers for all wings. Comparison of the normal-force curves for a given wing in all cases shows that at the lowest Mach number the normal-force curve tends to be convex, resulting in lower normal-force curve slopes at high angles of attack; whereas with increasing Mach number, the normal-force curve tended to become concave, resulting in higher slopes at high angles of attack.

No large effect of Mach number on the center-of-pressure position was noted. For the triangular wing of aspect ratio 2, in the moderate angle-of-attack range of 3° to 25°, the center-of-pressure position moved slightly forward ($0.03c_r$) with increasing Mach number while above 25° there was no consistent Mach number effect. In the case of the rectangular wing and of the aspect-ratio-4 triangular wing, the predominant effect of increasing Mach number was to decrease the spanwise variation with angle of attack of the center-of-pressure position.

Effects of Thickened Root

In reference 4, it was noted that at $M = 1.45$ the span loading was not affected by the thickened root for either wing. The center-of-pressure position of the rectangular wing moved $0.01c_r$ forward due to the presence of the thickened root section while that of the triangular wing was unaffected. At $M = 1.97$ the root-chord loadings of both wings were reduced by the presence of the thickened root so that the total normal force was reduced by 5 percent in the lower range of angles of attack (3° to 17.5°) and by less than 2 percent above 17.5°. The center-of-pressure position of the rectangular wing was again moved $0.01c_r$ forward while that of the triangular wing was unaffected by the presence of the thickened root section.

The effect of thickening the root-chord section at the higher Mach numbers of the present test can be seen by comparing figures 2 and 5 for the aspect-ratio-2 triangular wings and figures 4 and 6 for the rectangular wings. At $M = 2.46$, the span loading of the rectangular wing was negligibly affected by the thickened root chord up to 30° angle of attack. Above 30° the unthickened-root wing had unexpectedly higher chord loading at the tip, giving total normal forces 3 to 4 percent higher than those of the thickened-root wing at both Reynolds numbers. Re-examination of the corresponding data of ref. 4 for this wing at $M = 1.97$ revealed smaller but similar effects. This anomalous behavior suggested the possibility that the aeroelastic properties of the two wings differed to a sufficient degree to give different aerodynamic loadings at the tips. The two wings were accordingly bench loaded with approximately the same load distribution as under the tunnel test conditions. No important difference between the tip deflections was noted. No adequate explanation of the change in the pressures near the wing tip which accompanied thickening the root chord has been found. For the triangular wing at $M = 2.46$, the thickened root caused a loss of loading at the root chord giving a 1.5 percent lower total normal force over the angle-of-attack range of 6° to 40°. At $M = 3.36$, the thickened root caused a loss in root chord loading so that a 2.5-percent-normal-force decrease occurred for the triangular wing. The center-of-pressure position was not significantly altered for either plan form.

Effect of Reynolds Number

In the present test the Reynolds number was varied only in the tests conducted at Mach number 2.46. No large or systematic effects of Reynolds number occurred for all wings tested in the angle-of-attack range of 0° to 25°. Above 25° angle of attack, significant variations in span loading at the root chord occurred only for wing 2. These variations are shown in figure 3(a) where the span loading differences are compared by the dashed line ($R = 0.26 \times 10^6$ per inch) with the solid line ($R = 0.44 \times 10^6$ per inch). This difference in span loading, however, was confined to the root chord and was probably due to the effects of Reynolds number on the plate boundary layer.

CONCLUSIONS

In reference 4, semispan pressure-distribution models of two triangular wings of aspect ratios 2 and 4 and one rectangular wing of aspect ratio 2, all with thickened root sections, and a triangular and rectangular wing, both of aspect ratio 2 without thickened root sections, were tested over a wide angle-of-attack range for $M = 1.45$ and $M = 1.97$. In the present report, tests on the same wings were conducted at $M = 2.46$ at angles of attack from 0° to 50° and at $M = 3.36$ at angles of attack from 0° to 45°. Consideration of the results over the total Mach number range of 1.45 to 3.36 leads to the following conclusions:

1. In the angle-of-attack range of 0° to 40°, all the wings showed a tendency toward uniform loading at high angles of attack. Thus, with increasing angle of attack, the center pressure moved toward the centroid of area, and span loading curves tended to assume the shape of the wing plan form.

2. Thickening the root section caused a somewhat lower root chord loading on both the rectangular and triangular wings. The effect of this loading loss on the total normal force was small except at $M = 1.97$ where a 5-percent-normal-force loss occurred for all plan forms. Thickening the root chord had negligible effect on the center-of-pressure position of the triangular wing and caused a slight $(0.01c_r)$ forward shift of that of the rectangular wing at all Mach numbers.

3. The normal-force curve slope of all wings tested showed an expected decrease with increasing Mach numbers at the low angle-of-attack range. At the lowest Mach number, the normal-force curve tended to be convex, resulting in lower normal-force curve slopes at higher angles; whereas with increasing Mach number, the normal-force curve slope tended to become concave, resulting in higher slopes at high angles of attack.

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National Advisory Committee for Aeronautics
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TABLE I.- PRESSURE COEFFICIENTS OF WINGS

(a) Wing 1; M=2.46; R=0.44x10[6] per inch

y/s	x/c \ α	Upper surface											Lower surface											
		50°	45°	40°	35°	30°	25°	20°	15°	10°	6°	3°	0°	3°	6°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0.025	0.103	-0.206	-0.203	-0.196	-0.191	-0.179	-0.141	-0.092	-0.066	-0.033	-0.004	0.027	0.054	0.090	0.134	0.201	0.295	0.419	0.551	0.743	0.933	0.978	1.051	0.813
	.231	-.201	-.203	-.193	-.169	-.150	-.127	-.102	-.078	-.044	-.013	.017	.045	.080	.124	.194	.295	.414	.529	.657	.799	.870	.817	.725
	.359	-.199	-.202	-.197	-.181	-.152	-.133	-.106	-.085	-.053	-.027	0	.032	.065	.108	.177	.284	.410	.552	.666	.786	.851	.898	.889
	.487	-.198	-.203	-.198	-.186	-.160	-.140	-.114	-.088	-.062	-.036	-.012	.019	.045	.089	.152	.258	.377	.530	.675	.816	.884	.906	.989
	.583	-.202	-.203	-.200	-.188	-.165	-.145	-.119	-.100	-.074	-.049	-.020	.006	.039	.077	.137	.229	.351	.503	.655	.795	.897	.985	1.044
	.744	-.198	-.199	-.197	-.190	-.174	-.163	-.141	-.125	-.094	-.084	-.064	-.044	-.023	.008	.058	.140	.238	.369	.508	.659	.784	.895	1.076
	.872	-.197	-.197	-.194	-.187	-.181	-.167	-.141	-.125	-.094	-.083	-.059	-.041	-.018	.017	.072	.156	.257	.385	.527	.692	.879	1.054	1.215
	.976	-.196	-.195	-.192	-.184	-.179	-.162	-.141	-.125	-.094	-.074	-.050	-.034	-.007	.029	.085	.174	.284	.419	.578	.749	.925	1.080	1.179
.250	.104	-.203	-.206	-.209	-.210	-.209	-.205	-.195	-.184	-.134	-.067	.012	.062	.114	.170	.250	.357	.474	.601	.738	.918	1.097	1.454	1.749
	.229	-.203	-.207	-.207	-.208	-.206	-.202	-.186	-.155	-.094	-.040	-.003	.036	.079	.129	.202	.311	.435	.576	.711	.898	1.186	1.479	1.705
	.354	-.205	-.209	-.209	-.210	-.208	-.204	-.185	-.138	-.088	-.055	-.018	.019	.048	.098	.167	.270	.391	.527	.687	.917	1.183	1.399	1.586
	.500	-.206	-.207	-.206	-.206	-.209	-.204	-.185	-.135	-.094	-.059	-.038	-.009	.025	.068	.133	.228	.342	.474	.642	.859	1.076	1.255	1.345
	.625	-.203	-.205	-.205	-.205	-.207	-.204	-.190	-.141	-.094	-.073	-.045	-.020	.012	.051	.112	.205	.314	.443	.619	.818	1.002	1.114	1.129
	.750	-.203	-.203	-.205	-.203	-.207	-.202	-.190	-.149	-.103	-.079	-.052	-.029	.002	.038	.095	.181	.274	.390	.549	.726	.876	.970	1.028
	.875	-.211	-.211	-.209	-.208	-.207	-.200	-.190	-.157	-.114	-.091	-.069	-.046	-.019	.017	.069	.150	.251	.380	.527	.681	.815	.912	.964
	.969	-.198	-.197	-.193	-.186	-.200	-.193	-.180	-.155	-.114	-.094	-.072	-.050	-.026	.010	.064	.152	.254	.380	.541	.714	.868	.942	.885
.500	.125	-.200	-.201	-.202	-.204	-.211	-.206	-.201	-.196	-.162	-.105	-.017	.058	.117	.174	.254	.359	.471	.587	.714	.841	.964	1.143	1.517
	.250	-.203	-.203	-.201	-.198	-.211	-.209	-.203	-.193	-.155	-.098	-.017	.033	.089	.144	.218	.327	.446	.578	.709	.865	1.019	1.295	1.656
	.375	-.204	-.202	-.204	-.202	-.210	-.211	-.203	-.192	-.158	-.098	-.036	0	.051	.103	.167	.275	.388	.517	.659	.799	.976	1.300	1.615
	.500	-.204	-.201	-.204	-.205	-.210	-.210	-.206	-.195	-.158	-.096	-.054	-.017	.023	.071	.137	.240	.354	.486	.619	.778	.981	1.340	1.621
	.625	-.201	-.200	-.201	-.202	-.209	-.210	-.201	-.189	-.153	-.096	-.062	-.027	.010	.057	.124	.222	.333	.462	.619	.765	.964	1.325	1.592
	.750	-.200	-.199	-.198	-.199	-.207	-.207	-.198	-.177	-.148	-.098	-.066	-.034	.004	.050	.112	.208	.320	.447	.586	.743	.956	1.305	1.559
	.875	-.197	-.197	-.196	-.196	-.200	-.198	-.188	-.165	-.135	-.095	-.062	-.039	-.017	.032	.091	.185	.289	.412	.549	.683	.940	1.255	1.430
	.985	-.194	-.194	-.192	-.193	-.202	-.200	-.191	-.175	-.140	-.102	-.072	-.047	-.017	.027	.090	.175	.269	.385	.506	.651	.924	1.187	1.323
.750	.156	-.200	-.199	-.200	-.205	-.208	-.211	-.205	-.200	-.181	-.132	-.047	.054	.123	.184	.264	.362	.466	.564	.684	.798	.913	1.022	1.319
	.250	-.199	-.199	-.200	-.203	-.208	-.208	-.203	-.197	-.175	-.128	-.046	.036	.098	.157	.238	.340	.453	.564	.695	.827	.948	1.079	1.424
	.375	-.197	-.195	-.199	-.199	-.206	-.207	-.199	-.195	-.170	-.126	-.050	.012	.066	.124	.201	.308	.422	.549	.681	.821	.953	1.092	1.497
	.500	-.193	-.193	-.191	-.192	-.203	-.204	-.197	-.192	-.170	-.129	-.058	-.009	.046	.102	.181	.286	.407	.532	.678	.825	.951	1.114	1.543
	.750	-.192	-.194	-.189	-.189	-.200	-.202	-.200	-.196	-.176	-.137	-.075	-.034	.014	.065	.139	.244	.362	.497	.640	.764	.847	1.102	1.540
	.969	-.191	-.191	-.187	-.185	-.196	-.192	-.190	-.189	-.167	-.145	-.089	-.055	-.016	.038	.105	.201	.312	.433	.559	.676	.812	1.004	1.490
.875	.500	-.179	-.180	-.174	-.174	-.184	-.185	-.186	-.182	-.169	-.138	-.067	.014	.070	.134	.212	.321	.437	.553	.688	.811	.918	1.051	1.339
	.688	-.186	-.187	-.183	-.181	-.194	-.197	-.194	-.192	-.172	-.146	-.082	-.018	.042	.101	.181	.293	.407	.537	.673	.805	.933	1.079	1.368

(b) Wing 1; M=3.36; R=0.85x10[6] per inch

y/s	x/c \ α	Upper surface										Lower surface										
		45°	40°	35°	30°	25°	20°	15°	10°	6°	3°	0°	3°	6°	10°	15°	20°	25°	30°	35°	40°	45°
0.025	0.103	-0.097	-0.090	-0.097	-0.101	-0.092	-0.074	-0.043	-0.028	-0.012	0.010	0.038	0.070	0.111	0.181	0.293	0.429	0.618	0.855	1.138	1.105	1.260
	.231	-.094	-.088	-.091	-.100	-.077	-.065	-.056	-.036	-.013	.003	.023	.048	.088	.157	.252	.395	.549	.691	.775	.709	.637
	.359	-.096	-.088	-.092	-.097	-.078	-.067	-.056	-.042	-.022	-.007	.017	.038	.071	.131	.223	.337	.456	.585	.622	.594	.587
	.487	-.099	-.091	-.096	-.096	-.081	-.073	-.059	-.044	-.023	-.010	.011	.031	.065	.122	.216	.327	.458	.550	.576	.501	.564
	.583	-.103	-.097	-.103	-.101	-.086	-.075	-.062	-.050	-.034	-.018	.009	.035	.065	.110	.196	.313	.458	.580	.641	.632	.734
	.744	-.094	-.088	-.099	-.098	-.092	-.081	-.075	-.066	-.052	-.043	-.025	-.013	.010	.053	.120	.212	.324	.444	.557	.659	.770
	.872	-.092	-.086	-.097	-.098	-.090	-.079	-.075	-.064	-.051	-.041	-.020	-.009	.012	.063	.130	.231	.357	.494	.643	.798	.992
	.976	-.093	-.087	-.093	-.098	-.089	-.078	-.073	-.061	-.046	-.035	-.011	-.004	.019	.072	.146	.252	.397	.568	.763	.961	1.163
.250	.104	-.100	-.094	-.102	-.101	-.102	-.092	-.078	-.060	-.022	.009	.051	.093	.141	.216	.334	.446	.594	.731	.885	1.060	1.095
	.229	-.097	-.089	-.098	-.098	-.099	-.089	-.077	-.061	-.031	-.003	.028	.066	.110	.179	.287	.408	.535	.704	.862	1.019	1.166
	.354	-.099	-.094	-.101	-.101	-.101	-.093	-.080	-.065	-.035	-.015	.011	.041	.079	.142	.235	.347	.485	.639	.788	.941	1.409
	.500	-.100	-.095	-.103	-.101	-.102	-.092	-.082	-.067	-.042	-.026	-.003	.019	.054	.109	.198	.307	.447	.592	.746	1.005	1.757
	.625	-.101	-.095	-.104	-.101	-.102	-.093	-.083	-.068	-.046	-.032	-.012	.016	.042	.096	.179	.284	.422	.559	.743	1.198	1.595
	.750	-.097	-.089	-.100	-.099	-.101	-.090	-.080	-.067	-.049	-.036	-.010	.005	.033	.086	.161	.258	.378	.508	.746	1.155	1.324
	.875	-.099	-.094	-.101	-.100	-.104	-.094	-.085	-.070	-.055	-.043	-.022	-.002	.024	.071	.141	.231	.347	.487	.743	1.046	1.175
	.969	-.096	-.090	-.097	-.100	-.101	-.092	-.086	-.073	-.057	-.043	-.026	-.010	.014	.058	.125	.213	.329	.432	.674	.965	1.093
.500	.125	-.098	-.092	-.102	-.100	-.103	-.094	-.084	-.065	-.024	.015	.064	.121	.173	.242	.345	.460	.596	.733	.868	.996	1.124
	.250	-.097	-.093	-.100	-.100	-.101	-.092	-.083	-.067	-.031	.001	.042	.073	.129	.198	.299	.416	.561	.701	.857	1.013	1.205
	.375	-.097	-.091	-.099	-.101	-.101	-.092	-.084	-.073	-.040	-.015	.020	.057	.100	.163	.265	.382	.513	.650	.793	.974	1.171
	.500	-.099	-.094	-.101	-.102	-.105	-.098	-.092	-.080	-.051	-.028	.002	.037	.075	.136	.232	.346	.487	.626	.787	.977	1.134
	.625	-.099	-.095	-.103	-.102	-.103	-.095	-.092	-.083	-.055	-.036	-.008	.021	.053	.116	.208	.317	.450	.590	.749	.929	1.100
	.750	-.097	-.090	-.101	-.098	-.100	-.092	-.090	-.079	-.056	-.044	-.013	.017	.043	.101	.196	.297	.422	.566	.734	.907	1.060
	.875	-.086	-.079	-.091	-.092	-.092	-.080	-.080	-.066	-.052	-.033	.003	.004	.024	.099	.155	.275	.384	.525	.692	.844	1.037
	.985	-.094	-.088	-.095	-.095	-.098	-.090	-.089	-.081	-.061	-.042	-.023	-.006	.021	.076	.153	.251	.372	.509	.646	.803	1.003
.750	.156	-.096	-.089	-.100	-.097	-.100	-.093	-.088	-.071	-.027	.013	.067	.139	.201	.279	.380	.484	.603	.715	.830	.943	1.054
	.250	-.101	-.095	-.102	-.100	-.103	-.095	-.090	-.073	-.032	.001	.051	.116	.177	.246	.351	.461	.591	.716	.848	.980	1.108
	.375	-.095	-.089	-.098	-.097	-.099	-.092	-.085	-.069	-.038	-.009	.038	.089	.135	.208	.308	.421	.556	.694	.832	.978	1.117
	.500	-.094	-.086	-.095	-.095	-.097	-.089	-.086	-.072	-.045	-.020	.027	.066	.112	.181	.280	.395	.535	.678	.823	.978	1.123
	.750	-.097	-.091	-.098	-.097	-.101	-.095	-.091	-.080	-.057	-.035	.002	.032	.072	.135	.228	.342	.479	.622	.769	.931	1.070
	.969	-.093	-.088	-.095	-.094	-.099	-.092	-.088	-.078	-.063	-.042	-.015	.016	.058	.110	.193	.299	.423	.550	.705	.846	.973
.875	.500	-.091	-.085	-.092	-.091	-.098	-.089	-.086	-.073	-.043	-.013	.033	.087	.146	.218	.322	.435	.569	.689	.815	.946	1.051
	.688	-.095	-.088	-.094	-.093	-.102	-.096	-.091	-.081	-.054	-.029	.013	.063	.111	.182	.284	.397	.529	.658	.795	.942	1.066

TABLE I.- PRESSURE COEFFICIENTS OF WINGS - Continued

(c) Wing 2; M=2.46; R=0.44×10[6] per inch

y/s	x/c \ α	Upper surface 45°	40°	35°	30°	25°	20°	15°	10°	6°	3°	0°	Lower surface 3°	6°	10°	15°	20°	25°	30°	35°	40°	45°
0.025	0.103	-0.200	-0.189	-0.199	-0.182	-0.156	-0.116	-0.066	-0.027	0.015	0.054	0.096	0.143	0.196	0.279	0.399	0.544	0.719	0.967	1.209	1.418	1.451
	.231	-.194	-.179	-.169	-.146	-.130	-.105	-.073	-.036	.009	.039	.078	.119	.173	.265	.381	.525	.701	.909	1.087	1.180	1.125
	.272	-.196	-.179	-.174	-.156	-.140	-.116	-.086	-.051	-.006	.022	.061	.095	.148	.238	.354	.505	.683	.870	1.022	1.061	.991
	.487	-.197	-.180	-.176	-.159	-.144	-.124	-.068	-.052	-.012	.013	.041	.072	.118	.196	.313	.467	.617	.790	.954	1.092	1.050
	.792	-.212	-.200	-.204	-.195	-.189	-.181	-.166	-.150	-.124	-.109	-.087	-.071	-.043	.004	.077	.168	.289	.451	.620	.784	.910
	.872	-.202	-.191	-.201	-.187	-.182	-.170	-.151	-.133	-.105	-.087	-.068	-.055	-.028	.024	.108	.217	.357	.529	.726	.932	1.208
	.975	-.190	-.171	-.173	-.175	-.167	-.157	-.140	-.115	-.082	-.063	-.051	-.036	0	.068	.173	.310	.476	.654	.843	1.047	1.187
.250	.125	-.204	-.196	-.207	-.199	-.186	-.165	-.130	-.089	-.029	.016	.074	.140	.209	.316	.458	.610	.770	.931	1.098	1.255	1.392
	.260	-.206	-.198	-.208	-.199	-.186	-.167	-.136	-.100	-.045	-.005	.051	.102	.165	.255	.382	.524	.676	.840	1.010	1.166	1.339
	.375	-.207	-.200	-.207	-.199	-.167	-.167	-.137	-.102	-.054	-.016	.034	.078	.133	.215	.332	.469	.625	.779	.933	1.107	1.325
	.500	-.210	-.203	-.209	-.201	-.189	-.172	-.144	-.111	-.063	-.031	.011	.048	.097	.174	.286	.410	.554	.706	.870	1.058	1.339
	.625	-.211	-.203	-.209	-.200	-.190	-.172	-.147	-.115	-.067	-.042	-.004	.027	.077	.151	.254	.377	.529	.663	.831	.980	1.328
	.750	-.211	-.204	-.209	-.199	-.188	-.169	-.147	-.117	-.074	-.049	-.018	.012	.059	.118	.229	.347	.469	.610	.743	.894	1.264
	.875	-.208	-.201	-.210	-.200	-.188	-.172	-.151	-.123	-.083	-.060	-.030	-.002	.041	.103	.193	.307	.409	.538	.674	.803	1.216
	.966	-.202	-.188	-.203	-.194	-.185	-.173	-.159	-.131	-.094	-.077	-.049	-.020	.018	.077	.153	.238	.350	.477	.595	.739	1.160
.500	.125	-.209	-.200	-.210	-.201	-.194	-.170	-.133	-.093	-.038	.008	.066	.127	.207	.332	.501	.660	.812	.958	1.086	1.214	1.302
	.250	-.203	-.198	-.206	-.197	-.189	-.169	-.141	-.104	-.050	-.014	.049	.102	.182	.268	.428	.574	.723	.874	1.020	1.173	1.285
	.500	-.206	-.200	-.207	-.197	-.188	-.173	-.151	-.122	-.076	-.042	.010	.056	.119	.206	.324	.457	.613	.756	.914	1.067	1.202
	.750	-.204	-.198	-.206	-.197	-.188	-.167	-.150	-.137	-.094	-.064	-.014	.022	.074	.152	.263	.387	.526	.685	.838	.968	1.114
	.950	-.201	-.192	-.205	-.195	-.184	-.166	-.147	-.133	-.109	-.081	-.040	-.012	.036	.112	.215	.327	.462	.601	.725	.838	.958
.750	.375	-.193	-.183	-.205	-.195	-.187	-.175	-.143	-.110	-.062	-.027	.030	.078	.155	.284	.433	.580	.726	.874	1.017	1.141	1.231
	.625	-.196	-.184	-.205	-.195	-.185	-.168	-.155	-.130	-.086	-.051	-.002	.040	.110	.215	.342	.482	.630	.785	.937	1.065	1.156
	.900	-.198	-.188	-.204	-.195	-.185	-.164	-.143	-.125	-.098	-.061	-.041	-.008	.054	.140	.252	.378	.515	.659	.794	.901	.959

(d) Wing 2; M=3.36; R=0.85×10[6] per inch

y/s	x/c \ α	Upper surface 40°	35°	30°	25°	20°	15°	10°	6°	3°	0°	Lower surface 3°	6°	10°	15°	20°	25°	30°	35°	40°
0.025	0.103	-0.101	-0.098	-0.099	-0.093	-0.080	-0.067	-0.028	0.001	0.033	0.068	0.102	0.151	0.231	0.352	0.505	0.679	0.890	1.282	1.408
	.231	-.098	-.092	-.090	-.083	-.064	-.053	-.021	.003	.030	.063	.088	.133	.215	.331	.484	.683	.947	1.281	1.406
	.372	-.099	-.093	-.093	-.087	-.071	-.061	-.028	-.007	.018	.045	.072	.113	.189	.305	.462	.623	.807	.901	.909
	.487	-.096	-.094	-.095	-.091	-.076	-.063	-.028	-.010	.010	.033	.057	.089	.155	.275	.406	.554	.744	.883	.939
	.792	-.108	-.104	-.107	-.106	-.103	-.101	-.090	-.081	-.068	-.056	.044	-.027	.005	.058	.127	.201	.320	.497	.729
	.872	-.102	-.098	-.105	-.101	-.099	-.096	-.082	-.073	-.059	-.043	-.035	-.016	.025	.090	.185	.301	.456	.613	.793
	.875	-.090	-.092	-.095	-.095	-.092	-.090	-.072	-.060	-.048	-.042	-.033	-.017	.030	.108	.245	.398	.609	.856	1.153
.250	.125	-.104	-.095	-.104	-.099	-.089	-.085	-.049	-.022	.010	.049	.090	.147	.249	.384	.546	.716	.899	1.066	1.266
	.260	-.103	-.100	-.105	-.103	-.094	-.086	-.056	-.033	-.004	.036	.072	.123	.215	.336	.485	.639	.814	.981	1.176
	.375	-.103	-.099	-.105	-.101	-.096	-.090	-.061	-.041	-.015	.023	.058	.104	.189	.301	.437	.587	.754	.902	1.110
	.500	-.106	-.103	-.107	-.104	-.098	-.092	-.068	-.048	-.023	.009	.040	.081	.158	.253	.385	.522	.684	.846	1.052
	.625	-.108	-.103	-.107	-.105	-.098	-.095	-.072	-.054	-.029	.002	.031	.072	.139	.233	.357	.494	.647	.812	1.005
	.750	-.105	-.103	-.107	-.103	-.098	-.096	-.070	-.056	-.032	-.003	.019	.054	.118	.206	.325	.458	.592	.738	.918
	.875	-.099	-.096	-.104	-.100	-.097	-.094	-.072	-.058	-.034	-.010	.009	.042	.099	.178	.290	.390	.537	.696	.859
	.966	-.100	-.102	-.105	-.102	-.098	-.094	-.077	-.061	-.045	-.016	-.005	.025	.062	.144	.243	.352	.498	.632	.784
.500	.125	-.106	-.102	-.106	-.101	-.087	-.079	-.043	-.013	.022	.062	.106	.164	.273	.423	.617	.799	.989	1.142	1.312
	.250	-.101	-.098	-.103	-.101	-.091	-.084	-.052	-.027	.003	.042	.082	.135	.232	.377	.552	.738	.913	1.075	1.240
	.500	-.102	-.099	-.104	-.101	-.098	-.092	-.066	-.046	-.021	.010	.043	.089	.181	.309	.453	.597	.763	.924	1.112
	.750	-.100	-.099	-.103	-.101	-.097	-.091	-.076	-.059	-.039	-.007	.020	.062	.141	.244	.375	.511	.665	.825	1.007
	.950	-.099	-.098	-.103	-.101	-.095	-.091	-.080	-.069	-.049	-.024	.000	.037	.106	.198	.313	.439	.585	.731	.903
.750	.375	-.099	-.097	-.103	-.099	-.094	-.088	-.058	-.034	-.008	.028	.061	.113	.210	.356	.543	.715	.882	1.026	1.199
	.625	-.096	-.096	-.102	-.098	-.094	-.092	-.069	-.051	-.027	.004	.035	.080	.166	.295	.465	.623	.784	.943	1.114
	.900	-.098	-.096	-.102	-.098	-.090	-.086	-.069	-.063	-.047	-.021	.001	.040	.112	.215	.336	.468	.624	.775	.954

NACA

TABLE I.- PRESSURE COEFFICIENTS OF WINGS - Continued

(e) Wing 3; M=2.46; R=0.44×10⁶ per inch

		Upper surface										Lower surface								
y/s	x/c \ α	40°	35°	30°	25°	20°	15°	10°	6°	3°	0°	3°	6°	10°	15°	20°	25°	30°	35°	40°
0.025	0.054	-0.185	-0.188	-0.164	-0.143	-0.104	-0.063	0.004	0.070	0.122	0.183	0.245	0.320	0.426	0.575	0.772	1.130	1.383	1.257	1.070
	.141	-.172	-.174	-.172	-.159	-.118	-.086	-.033	.022	.072	.117	.176	.246	.346	.494	.676	.951	1.369	1.461	1.512
	.242	-.192	-.193	-.183	-.172	-.139	-.105	-.051	.002	.053	.097	.150	.221	.320	.491	.695	.940	1.299	1.451	1.529
	.617	-.208	-.208	-.201	-.200	-.188	-.175	-.149	-.118	-.091	-.067	-.039	.004	.059	.163	.310	.476	.607	.853	1.121
	.805	-.210	-.210	-.204	-.197	-.184	-.171	-.142	-.109	-.079	-.056	-.026	.026	.105	.237	.414	.553	.712	.948	1.183
	.953	-.188	-.188	-.183	-.178	-.166	-.153	-.122	-.078	-.044	-.026	.016	.073	.160	.299	.469	.636	.794	.994	1.161
.250	.054	-.202	-.201	-.178	-.170	-.148	-.121	-.066	-.010	.042	.092	.153	.230	.336	.517	.739	1.094	1.391	1.576	1.704
	.141	-.197	-.197	-.183	-.175	-.153	-.128	-.086	-.026	.025	.072	.131	.207	.313	.478	.694	.990	1.207	1.392	1.559
	.242	-.199	-.199	-.189	-.181	-.160	-.136	-.092	-.042	.004	.048	.105	.176	.280	.450	.673	.888	1.068	1.233	1.385
	.367	-.200	-.202	-.192	-.184	-.163	-.142	-.097	-.050	-.013	.038	.093	.163	.268	.426	.605	.811	.964	1.111	1.276
	.492	-.203	-.203	-.190	-.182	-.166	-.147	-.105	-.059	-.015	.026	.079	.145	.238	.379	.560	.717	.841	.975	1.142
	.617	-.199	-.199	-.189	-.181	-.169	-.152	-.112	-.069	-.026	.013	.061	.124	.212	.344	.493	.592	.686	.816	.983
	.805	-.202	-.203	-.189	-.183	-.169	-.159	-.124	-.084	-.051	-.019	.021	.072	.141	.235	.351	.483	.600	.759	.950
	.953	-.196	-.196	-.189	-.183	-.173	-.168	-.142	-.109	-.081	-.054	-.024	.022	.085	.190	.314	.455	.588	.745	.919
.563	.054	-.200	-.200	-.175	-.165	-.138	-.104	-.046	.016	.074	.126	.194	.277	.395	.573	.794	1.144	1.428	1.613	1.713
	.141	-.196	-.196	-.183	-.173	-.148	-.120	-.067	-.009	.043	.093	.156	.231	.342	.510	.729	1.003	1.206	1.388	1.516
	.242	-.197	-.198	-.188	-.179	-.158	-.133	-.088	-.035	.014	.060	.118	.188	.292	.453	.660	.877	1.054	1.220	1.360
	.367	-.204	-.205	-.196	-.187	-.169	-.150	-.107	-.059	-.016	.026	.077	.145	.239	.391	.576	.747	.912	1.067	1.209
	.492	-.199	-.201	-.192	-.183	-.175	-.158	-.120	-.076	-.035	.002	.052	.111	.202	.342	.511	.661	.805	.956	1.093
	.617	-.200	-.201	-.190	-.179	-.167	-.162	-.127	-.086	-.047	-.011	.033	.092	.177	.308	.460	.602	.730	.860	1.002
	.805	-.197	-.199	-.190	-.181	-.163	-.156	-.133	-.095	-.058	-.024	.018	.071	.152	.269	.400	.517	.616	.754	.911
	.953	-.192	-.194	-.190	-.182	-.166	-.152	-.137	-.103	-.070	-.039	-.001	.050	.125	.228	.345	.430	.538	.682	.817
.875	.054	-.196	-.196	-.179	-.170	-.149	-.121	-.068	-.012	.041	.091	.155	.231	.337	.525	.754	1.029	1.257	1.446	1.563
	.141	-.198	-.198	-.187	-.176	-.154	-.129	-.089	-.027	.024	.071	.131	.207	.315	.478	.667	.851	1.035	1.215	1.354
	.242	-.196	-.196	-.185	-.172	-.150	-.125	-.082	-.052	.006	.049	.101	.165	.254	.397	.561	.713	.876	1.047	1.184
	.367	-.198	-.199	-.188	-.176	-.154	-.129	-.084	-.050	-.015	.017	.059	.115	.197	.318	.448	.587	.739	.906	1.044
	.492	-.195	-.195	-.183	-.164	-.141	-.125	-.085	-.049	-.021	.003	.036	.085	.156	.253	.378	.513	.659	.820	.960
	.617	-.198	-.198	-.185	-.171	-.146	-.118	-.078	-.051	-.025	-.008	.018	.061	.118	.213	.333	.462	.608	.756	.892
	.805	-.204	-.204	-.194	-.180	-.159	-.129	-.086	-.058	-.035	-.024	-.005	.027	.082	.172	.290	.425	.548	.683	.830
	.953	-.197	-.199	-.191	-.183	-.169	-.144	-.099	-.063	-.044	-.035	-.021	.011	.059	.147	.270	.388	.494	.624	.754

(f) Wing 3; M=3.36; R=0.85×10⁶ per inch

		Upper surface									Lower surface								
y/s	x/c \ α	35°	30°	25°	20°	15°	10°	6°	3°	0°	3°	6°	10°	15°	20°	25°	30°	35°
0.025	0.054	-0.082	-0.086	-0.076	-0.062	-0.040	-0.001	0.056	0.104	0.161	0.228	0.299	0.412	0.553	0.707	0.907	1.185	1.780
	.141	-.083	-.087	-.078	-.062	-.040	-.010	.028	.060	.099	.152	.217	.310	.459	.615	.786	1.012	.227
	.242	-.086	-.090	-.083	-.069	-.050	-.024	.009	.037	.071	.102	.170	.260	.387	.561	.776	1.015	.124
	.617	-.096	-.095	-.092	-.082	-.087	-.074	-.069	-.054	-.019	-.020	.014	.063	.136	.221	.373	.558	.783
	.805	-.098	-.099	-.097	-.090	-.090	-.077	-.066	-.054	-.025	-.018	.017	.076	.173	.318	.517	.724	.917
	.953	-.090	-.092	-.089	-.078	-.083	-.068	-.053	-.037	-.035	-.010	.025	.090	.210	.360	.530	.701	.851
.250	.054	-.090	-.092	-.087	-.075	-.062	-.038	-.002	.028	.058	.116	.181	.280	.425	.595	.815	1.091	1.440
	.141	-.088	-.092	-.085	-.073	-.064	-.041	-.010	.017	.053	.099	.158	.255	.396	.557	.765	1.050	1.332
	.242	-.091	-.092	-.088	-.076	-.070	-.049	-.021	.001	.040	.081	.138	.227	.366	.516	.736	.992	1.223
	.367	-.093	-.093	-.090	-.080	-.076	-.056	-.031	-.010	.027	.064	.120	.204	.339	.507	.712	.927	1.135
	.492	-.095	-.098	-.094	-.086	-.081	-.063	-.040	-.018	.006	.050	.102	.186	.322	.476	.656	.874	1.016
	.617	-.095	-.098	-.093	-.086	-.082	-.065	-.044	-.024	.010	.047	.099	.185	.310	.458	.629	.776	.886
	.805	-.093	-.097	-.092	-.084	-.083	-.067	-.048	-.028	.005	.033	.079	.148	.248	.363	.497	.644	.778
	.953	-.090	-.092	-.089	-.078	-.083	-.068	-.053	-.037	-.011	.010	.048	.109	.197	.298	.447	.578	.743
.563	.054	-.089	-.091	-.087	-.075	-.060	-.039	.001	.034	.074	.129	.193	.292	.444	.619	.846	1.148	.212
	.141	-.092	-.095	-.089	-.079	-.065	-.041	-.007	.023	.061	.112	.176	.269	.416	.589	.812	1.099	.027
	.242	-.092	-.095	-.089	-.080	-.070	-.048	-.017	.010	.044	.094	.148	.244	.384	.551	.774	1.010	1.198
	.367	-.095	-.098	-.094	-.087	-.078	-.058	-.031	-.006	.023	.071	.124	.213	.345	.497	.696	.902	1.061
	.492	-.096	-.095	-.094	-.087	-.080	-.063	-.039	-.017	.013	.053	.105	.185	.305	.437	.639	.812	.972
	.617	-.096	-.097	-.094	-.087	-.085	-.067	-.045	-.025	.003	.038	.087	.162	.274	.415	.589	.745	.896
	.805	-.092	-.095	-.090	-.081	-.081	-.067	-.053	-.036	-.003	.020	.064	.138	.245	.368	.528	.671	.799
	.953	-.092	-.095	-.090	-.081	-.083	-.073	-.060	-.036	-.012	.007	.051	.119	.218	.344	.479	.596	.715
.875	.054	-.087	-.091	-.084	-.074	-.059	-.032	.005	.035	.073	.128	.197	.297	.447	.626	.855	1.117	.089
	.141	-.090	-.093	-.088	-.079	-.064	-.040	-.004	.021	.067	.113	.175	.272	.416	.589	.789	.969	1.191
	.242	-.090	-.093	-.088	-.076	-.069	-.048	-.017	.009	.046	.093	.148	.241	.370	.511	.672	.845	1.044
	.367	-.097	-.099	-.094	-.087	-.076	-.055	-.032	-.010	.020	.057	.108	.181	.290	.414	.563	.731	.908
	.492	-.094	-.096	-.090	-.083	-.076	-.056	-.038	-.023	.005	.031	.074	.142	.240	.351	.494	.649	.826
	.617	-.091	-.096	-.090	-.080	-.078	-.059	-.043	-.028	-.004	.016	.052	.114	.207	.314	.449	.594	.773
	.805	-.093	-.096	-.092	-.083	-.074	-.055	-.046	-.033	-.010	-.001	.033	.090	.172	.277	.411	.548	.705
	.953	-.093	-.097	-.092	-.084	-.078	-.060	-.046	-.036	-.019	-.010	.019	.075	.154	.248	.367	.505	.639

NACA

TABLE I. - PRESSURE COEFFICIENTS OF WINGS - Continued

(g) Wing 4; M=2.46; R=0.44×10⁶ per inch

		Upper surface												Lower surface										
y/s	x/c \ α	50°	45°	40°	35°	30°	25°	20°	15°	10°	6°	3°	0°	3°	6°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0.025	0.103	-0.193	-0.210	-0.206	-0.201	-0.192	-0.176	-0.123	-0.062	---	-0.012	0.016	0.049	0.084	0.128	---	0.295	0.412	0.567	0.710	0.853	0.906	0.742	0.480
	.231	-.192	-.210	-.204	-.195	-.170	-.128	-.096	-.074	---	-.013	.011	.042	.076	.124	---	.293	.420	.564	.695	.811	.894	.974	.842
	.359	-.192	-.206	-.198	-.188	-.177	-.149	-.115	-.092	---	-.031	-.003	.031	.064	.104	---	.276	.408	.555	.705	.930	1.022	1.051	.993
	.487	-.188	-.201	-.194	-.183	-.168	-.146	-.121	-.104	---	-.050	-.028	.001	.031	.071	---	.235	.361	.506	.663	.835	1.003	1.088	1.057
	.583	-.193	-.197	-.194	-.181	-.163	-.143	-.120	-.102	---	-.049	-.026	.002	.032	.071	---	.229	.349	.488	.645	.817	.953	1.042	1.058
	.744	-.203	-.193	-.192	-.185	-.170	-.151	-.129	-.109	---	-.061	-.036	-.012	.017	.056	---	.205	.324	.461	.619	.771	.934	1.038	1.035
	.872	-.206	-.201	-.198	-.192	-.180	-.160	-.138	-.120	---	-.073	-.051	-.028	.001	.036	---	.178	.291	.425	.566	.732	.889	.968	1.029
	.976	-.205	-.179	-.182	-.184	-.175	-.161	-.141	-.124	---	-.077	-.057	-.033	-.007	.027	---	.166	.279	.412	.557	.712	.850	.962	.977
.250	.104	-.189	-.210	-.208	-.206	-.206	-.199	-.189	-.181	---	-.056	.012	.063	.114	.169	---	.352	.470	.601	.744	.903	1.102	1.466	1.771
	.229	-.187	-.213	-.212	-.210	-.209	-.202	-.189	-.181	---	-.039	-.005	.035	.080	.131	---	.322	.447	.581	.750	.956	1.247	1.539	1.763
	.354	-.187	-.211	-.210	-.211	-.209	-.202	-.184	-.165	---	-.052	-.023	.017	.053	.097	---	.287	.401	.537	.694	.928	1.199	1.439	1.576
	.500	-.187	-.210	-.209	-.210	-.209	-.202	-.184	-.165	---	-.069	-.041	-.013	.019	.058	---	.219	.341	.499	.659	.876	1.078	1.224	1.298
	.625	-.191	-.210	-.208	-.208	-.209	-.202	-.186	-.169	---	-.079	-.055	-.025	.011	.053	---	.201	.314	.444	.607	.810	.973	1.118	1.138
	.750	-.193	-.210	-.208	-.206	-.208	-.202	-.186	-.164	---	-.078	-.054	-.028	.002	.040	---	.184	.297	.433	.591	.770	.934	1.022	.979
	.875	-.193	-.208	-.208	-.206	-.207	-.202	-.180	-.158	---	-.082	-.060	-.034	-.004	.035	---	.176	.285	.420	.570	.733	.871	.926	.859
	.969	-.193	-.134	-.197	-.201	-.202	-.196	-.171	-.141	---	-.081	-.059	-.034	-.007	.030	---	.174	.281	.406	.556	.712	.831	.875	.810
.500	.125	-.190	-.208	-.207	-.207	-.210	-.205	-.199	-.194	---	-.099	-.003	.066	.101	.181	---	.362	.478	.597	.700	.826	.957	1.161	1.568
	.250	-.191	-.208	-.207	-.207	-.210	-.207	-.199	-.194	---	-.090	-.019	.029	.082	.135	---	.316	.434	.554	.680	.822	.967	1.275	1.642
	.375	-.193	-.208	-.207	-.209	-.210	-.207	-.199	-.195	---	-.090	-.040	.001	.050	.096	---	.268	.382	.513	.651	.802	.978	1.354	1.647
	.500	-.193	-.209	-.208	-.207	-.210	-.207	-.199	-.195	---	-.092	-.057	-.016	.022	.078	---	.229	.346	.487	.620	.777	.978	1.359	1.602
	.625	-.198	-.209	-.209	-.208	-.210	-.208	-.199	-.195	---	-.097	-.066	-.029	.012	.049	---	.212	.334	.457	.595	.753	1.006	1.328	1.550
	.750	-.199	-.209	-.209	-.208	-.208	-.208	-.197	-.189	---	-.097	-.069	-.032	-.003	.040	---	.201	.312	.441	.581	.733	1.019	1.286	1.484
	.875	-.201	-.208	-.208	-.205	-.205	-.203	-.195	-.186	---	-.099	-.072	-.044	-.010	.034	---	.183	.296	.421	.563	.710	1.007	1.234	1.423
	.985	-.203	-.206	-.204	-.200	-.184	-.194	-.175	-.190	---	-.102	-.087	-.049	-.017	.021	---	.167	.277	.397	.527	.685	.995	1.135	1.260
.750	.156	-.206	-.207	-.206	-.206	-.206	-.206	-.200	-.193	---	-.120	-.044	.083	.153	.213	---	.390	.490	.595	.705	.818	.918	1.055	1.380
	.250	-.208	-.206	-.206	-.205	-.206	-.206	-.200	-.193	---	-.117	-.046	.041	.099	.155	---	.326	.432	.543	.647	.773	.864	.987	1.358
	.375	-.207	-.206	-.205	-.204	-.203	-.203	-.196	-.189	---	-.115	-.044	.015	.067	.123	---	.299	.414	.539	.669	.804	.932	1.090	1.476
	.500	-.211	-.203	-.203	-.202	-.201	-.199	-.195	-.189	---	-.120	-.056	-.008	.045	.096	---	.270	.388	.521	.650	.785	.921	1.113	1.488
	.750	-.215	-.203	-.203	-.201	-.201	-.197	-.192	-.189	---	-.130	-.078	-.035	.013	.061	---	.228	.351	.473	.606	.748	.892	1.129	1.475
	.969	-.221	-.202	-.202	-.200	-.197	-.192	-.188	-.189	---	-.133	-.087	-.049	-.004	.046	---	.213	.322	.447	.573	.710	.846	1.103	1.327
.875	.500	-.221	-.199	-.198	-.198	-.197	-.134	-.190	-.189	---	-.135	-.079	.014	.074	.132	---	.310	.429	.546	.664	.786	.895	1.037	1.347
	.688	-.221	-.197	-.197	-.196	-.194	-.193	-.187	-.185	---	-.135	-.084	-.012	.045	.101	---	.283	.405	.523	.649	.775	.897	1.047	1.354

(h) Wing 4; M=3.36; R=0.85×10⁶ per inch

		Upper surface										Lower surface								
y/s	x/c \ α	45°	40°	35°	30°	25°	20°	15°	10°	6°	0°	6°	10°	15°	20°	25°	30°	35°	40°	45°
0.025	0.103	-0.102	-0.100	-0.097	-0.094	-0.088	-0.076	-0.050	-0.027	-0.013	0.029	0.109	0.177	0.293	0.429	0.634	0.871	0.913	0.941	0.838
	.231	-.102	-.100	-.093	-.088	-.077	-.065	-.053	-.037	-.018	.025	.096	.162	.262	.390	.530	.688	.666	.787	.870
	.359	-.105	-.101	-.097	-.093	-.081	-.071	-.062	-.045	-.025	.016	.081	.133	.233	.367	.526	.713	.860	.855	.811
	.487	-.097	-.094	-.091	-.087	-.081	-.068	-.061	-.046	-.031	.005	.060	.111	.197	.308	.455	.633	.787	.800	.727
	.583	-.098	-.096	-.093	-.088	-.084	-.071	-.063	-.048	-.034	.000	.056	.103	.194	.303	.453	.647	.841	.839	.741
	.744	-.100	-.096	-.099	-.093	-.092	-.078	-.070	-.057	-.042	-.009	.039	.094	.182	.294	.444	.622	.807	.798	.728
	.872	-.103	-.102	-.101	-.097	-.098	-.083	-.073	-.062	-.047	-.015	.034	.080	.165	.269	.421	.584	.751	.808	.773
	.976	-.098	-.096	-.095	-.093	-.090	-.082	-.074	-.063	-.051	-.019	.026	.069	.149	.249	.385	.553	.736	.841	.821
.250	.104	-.109	-.104	-.103	-.101	-.100	-.092	-.080	-.055	-.020	.058	.152	.219	.325	.443	.579	.734	.894	1.033	1.185
	.229	-.108	-.103	-.104	-.101	-.100	-.091	-.081	-.060	-.031	.032	.115	.185	.303	.429	.567	.714	.892	1.017	1.190
	.354	-.110	-.104	-.104	-.101	-.100	-.091	-.081	-.063	-.037	.014	.083	.145	.246	.359	.496	.669	.799	.880	1.537
	.500	-.110	-.104	-.105	-.102	-.100	-.093	-.085	-.068	-.046	-.004	.058	.113	.212	.304	.436	.593	.743	.931	1.660
	.625	-.111	-.107	-.106	-.104	-.101	-.095	-.085	-.070	-.053	-.015	.039	.088	.177	.281	.409	.555	.714	1.072	1.464
	.750	-.105	-.100	-.102	-.098	-.097	-.090	-.085	-.067	-.053	-.020	.035	.084	.165	.265	.390	.539	.716	1.124	1.284
	.875	-.108	-.102	-.103	-.099	-.098	-.091	-.084	-.069	-.056	-.020	.026	.069	.152	.252	.381	.538	.748	1.073	1.113
	.969	-.106	-.101	-.103	-.102	-.100	-.091	-.085	-.070	-.055	-.020	.026	.072	.150	.244	.373	.515	.760	1.021	1.023
.500	.125	-.109	-.103	-.105	-.104	-.102	-.094	-.085	-.064	-.021	.079	.186	.256	.363	.478	.609	.753	.896	.995	1.119
	.250	-.111	-.107	-.107	-.105	-.103	-.097	-.085	-.063	-.030	.051	.138	.205	.312	.426	.557	.717	.856	.972	1.125
	.375	-.109	-.105	-.105	-.103	-.101	-.098	-.087	-.069	-.042	.023	.102	.166	.269	.382	.525	.662	.815	.946	1.106
	.500	-.109	-.102	-.104	-.101	-.102	-.095	-.088	-.073	-.050	.003	.076	.131	.229	.340	.465	.617	.767	.899	1.070
	.625	-.112	-.105	-.106	-.103	-.102	-.097	-.092	-.077	-.057	-.010	.055	.110	.206	.306	.436	.586	.739	.875	1.044
	.750	-.108	-.102	-.104	-.100	-.102	-.095	-.092	-.077	-.062	-.019	.050	.092	.183	.282	.410	.564	.722	.852	1.022
	.875	-.107	-.106	-.106	-.103	-.102	-.097	-.094	-.081	-.066	-.019	.030	.079	.160	.262	.387	.533	.697	.838	1.017
	.985	-.109	-.103	-.102	-.100	-.100	-.095	-.091	-.081	-.068	-.020	.021	.062	.146	.244	.361	.509	.668	.816	1.005
.750	.156	-.112	-.102	-.102	-.099	-.100	-.093	-.088	-.068	-.030	.084	.218	.292	.391	.492	.602	.717	.847	1.050	1.165
	.250	-.111	-.106	-.106	-.104	-.104	-.098	-.090	-.068	-.032	.064	.180	.252	.358	.465	.585	.713	.857	1.066	1.204
	.375	-.107	-.100	-.102	-.098	-.100	-.093	-.087	-.068	-.042	.040	.140	.204	.310	.423	.549	.688	.846	1.053	1.215
	.500	-.113	-.105	-.107	-.105	-.103	-.096	-.088	-.070	-.049	.024	.108	.171	.271	.381	.509	.650	.813	1.019	1.195
	.750	-.109	-.103	-.104	-.100	-.102	-.096	-.091	-.077	-.061	-.002	.066	.124	.219	.327	.451	.597	.761	.957	1.151
	.969	-.109	-.103	-.104	-.100	-.101	-.096	-.089	-.076	-.068	-.014	.033	.091	.192	.294	.418	.569	.732	.917	1.114
.875	.500	-.109	-.101	-.102	-.100	-.101	-.096	-.088	-.076	-.047	.036	.147	.217	.320	.431	.546	.677	.815	1.049	1.225
	.688	-.109	-.102	-.103	-.100	-.101	-.096	-.088	-.077	-.057	.018	.114	.181	.264	.392	.510	.650	.796	1.022	1.204

NACA

TABLE I.- PRESSURE COEFFICIENTS OF WINGS - Concluded

(i) Wing 5; M=2.46; R=0.44×10[6] per inch

		Upper surface											Lower surface									
y/s	x/c \ α	42.5°	40°	35°	30°	25°	20°	15°	10°	6°	3°	0°	3°	6°	10°	15°	20°	25°	30°	35°	40°	42.5°
0.025	0.054	-0.131	-0.187	-0.178	-0.170	-0.152	-0.131	-0.101	-0.052	-0.003	0.042	0.100	0.164	0.231	0.339	0.493	0.670	0.955	1.212	1.271	1.175	1.074
	.141	-.128	-.187	-.183	-.177	-.165	-.143	-.117	-.071	-.023	.016	.065	.121	.188	.298	.462	.671	.999	1.406	1.540	1.532	1.451
	.242	-.134	-.187	-.187	-.176	-.169	-.149	-.126	-.085	-.036	.003	.052	.106	.171	.280	.452	.659	.909	1.202	1.481	1.561	1.544
	.617	-.123	-.183	-.179	-.169	-.165	-.151	-.134	-.101	-.064	-.033	.005	.052	.107	.196	.336	.508	.699	.864	1.101	1.335	1.365
	.805	-.136	-.197	-.192	-.180	-.179	-.169	-.155	-.123	-.085	-.055	-.018	.027	.080	.165	.301	.473	.639	.792	1.003	1.213	1.261
	.953	-.134	-.200	-.197	-.176	-.182	-.165	-.158	-.127	-.091	-.062	-.024	.017	.070	.153	.286	.449	.593	.741	.934	1.113	1.131
.250	.054	-.128	-.181	-.174	-.160	-.152	-.137	-.111	-.064	-.009	.036	.092	.156	.228	.344	.525	.749	1.104	1.370	1.543	1.691	0
	.141	-.145	-.191	-.183	-.172	-.166	-.145	-.120	-.075	-.022	.020	.073	.133	.203	.318	.491	.714	.980	1.184	1.359	1.555	1.881
	.242	-.140	-.192	-.187	-.176	-.171	-.150	-.131	-.088	-.039	.003	.051	.108	.174	.284	.451	.662	.882	1.049	1.210	1.409	1.674
	.367	-.143	-.196	-.192	-.179	-.178	-.159	-.140	-.102	-.058	-.023	.024	.079	.143	.248	.399	.573	.778	.929	1.083	1.267	1.493
	.492	-.143	-.195	-.191	-.177	-.177	-.164	-.148	-.113	-.071	-.038	.005	.053	.111	.203	.344	.511	.690	.833	.991	1.168	1.368
	.617	-.150	-.193	-.191	-.178	-.175	-.163	-.152	-.120	-.080	-.052	-.012	.032	.089	.175	.313	.471	.636	.784	.941	1.111	1.298
	.805	-.143	-.192	-.189	-.178	-.174	-.162	-.153	-.127	-.090	-.063	-.024	.017	.069	.153	.284	.437	.583	.717	.867	1.031	1.199
	.953	-.142	-.189	-.189	-.177	-.174	-.160	-.148	-.132	-.098	-.073	-.035	.004	.054	.137	.262	.397	.531	.650	.786	.949	1.104
.563	.054	-.131	-.192	-.185	-.171	-.157	-.134	-.103	-.053	.004	.051	.110	.175	.241	.374	.557	.781	1.126	1.396	1.577	1.682	1.715
	.141	-.141	-.190	-.183	-.172	-.162	-.140	-.117	-.067	-.014	.028	.082	.141	.212	.324	.506	.728	1.006	1.206	1.384	1.523	1.585
	.242	-.141	-.194	-.189	-.177	-.171	-.153	-.130	-.088	-.040	-.002	.047	.103	.169	.277	.446	.647	.873	1.049	1.220	1.373	1.464
	.367	-.135	-.197	-.193	-.181	-.179	-.162	-.143	-.103	-.063	-.028	.018	.070	.132	.230	.387	.572	.749	.910	1.075	1.236	1.348
	.492	-.144	-.193	-.188	-.175	-.176	-.163	-.149	-.115	-.075	-.044	-.004	.041	.099	.189	.337	.502	.647	.802	.965	1.132	1.245
	.617	-.144	-.191	-.188	-.175	-.173	-.161	-.154	-.123	-.086	-.056	-.017	.025	.081	.169	.303	.442	.589	.741	.906	1.063	1.164
	.805	-.138	-.193	-.191	-.178	-.177	-.160	-.151	-.126	-.095	-.069	-.029	.011	.061	.141	.259	.386	.524	.671	.820	.961	1.038
	.953	-.138	-.191	-.189	-.178	-.175	-.160	-.148	-.130	-.101	-.077	-.041	-.005	.046	.117	.224	.344	.482	.610	.751	.853	.916
.875	.054	-.133	-.189	-.180	-.167	-.162	-.142	-.117	-.070	-.014	.029	.086	.149	.221	.342	.519	.748	1.068	1.308	1.533	1.798	1.898
	.141	-.135	-.186	-.179	-.167	-.163	-.146	-.124	-.080	-.028	.013	.065	.129	.192	.303	.415	.689	.887	1.082	1.310	1.555	1.655
	.242	-.135	-.186	-.179	-.167	-.157	-.141	-.124	-.086	-.043	-.008	.039	.089	.149	.242	.392	.575	.742	.918	1.148	1.372	1.468
	.367	-.136	-.186	-.179	-.167	-.155	-.137	-.124	-.090	-.056	-.030	.005	.042	.093	.175	.318	.461	.616	.796	1.016	1.216	1.301
	.492	-.139	-.185	-.176	-.167	-.152	-.133	-.124	-.095	-.065	-.045	-.018	.011	.054	.127	.248	.373	.523	.698	.900	1.088	1.173
	.617	-.136	-.185	-.179	-.170	-.156	-.133	-.115	-.087	-.065	-.045	-.021	.001	.037	.101	.210	.327	.477	.660	.854	1.023	1.101
	.805	-.144	-.188	-.185	-.174	-.167	-.146	-.124	-.090	-.065	-.047	-.026	-.012	.017	.072	.173	.294	.444	.618	.772	.913	.980
	.953	-.137	-.185	-.182	-.171	-.171	-.155	-.137	-.099	-.065	-.055	-.037	-.022	.007	.057	.158	.275	.425	.581	.714	.833	.882

(j) Wing 5; M=3.36; R=0.85×10[6] per inch

		Upper surface									Lower surface							
y/s	x/c \ α	35°	30°	25°	20°	15°	10°	6°	3°	0°	3°	6°	10°	15°	20°	25°	30°	35°
0.025	0.054	-0.100	-0.098	-0.090	-0.079	-0.065	-0.033	-0.001	-0.031	0.068	0.116	0.170	0.257	0.371	0.540	0.713	0.947	1.195
	.141	-.102	-.101	-.094	-.086	-.072	-.044	-.016	.012	.043	.084	.132	.209	.328	.464	.671	.943	1.372
	.242	[illegible]	-.104	-.097	-.090	-.079	-.052	-.026	-.001	.028	.066	.110	.196	.328	.497	.694	.966	1.229
	.617	-.103	-.104	-.099	-.098	-.089	-.072	-.049	-.030	-.004	.028	.069	.140	.257	.400	.584	.828	1.062
	.805	-.105	-.104	-.101	-.100	-.093	-.074	-.053	-.035	-.009	.021	.064	.133	.255	.386	.553	.783	.963
	.953	-.099	-.101	-.094	-.097	-.092	-.076	-.055	-.039	-.015	.013	.051	.111	.219	.357	.535	.740	.905
.250	.054	-.102	-.103	-.097	-.087	-.074	-.041	-.009	.024	.067	.116	.172	.270	.414	.601	.819	1.113	1.459
	.141	-.102	-.103	-.098	-.090	-.076	-.048	-.018	.012	.050	.096	.154	.244	.389	.561	.765	1.044	1.294
	.242	-.107	-.105	-.101	-.095	-.083	-.058	-.029	.001	.035	.081	.131	.217	.354	.519	.719	.953	1.180
	.367	-.101	-.102	-.100	-.095	-.085	-.062	-.038	-.013	.020	.060	.106	.184	.312	.473	.653	.865	1.081
	.492	-.105	-.103	-.101	-.098	-.089	-.070	-.047	-.025	.005	.041	.085	.161	.283	.426	.596	.817	.987
	.617	-.107	-.105	-.101	-.098	-.093	-.077	-.057	-.035	-.008	.026	.070	.139	.253	.384	.553	.761	.925
	.805	-.107	-.103	-.101	-.096	-.090	-.080	-.061	-.042	-.017	.014	.053	.115	.223	.354	.526	.720	.851
	.953	-.099	-.101	-.095	-.095	-.087	-.080	-.061	-.046	-.024	.004	.042	.101	.207	.332	.510	.655	.797
.563	.054	-.099	-.098	-.094	-.085	-.069	-.036	-.004	.025	.073	.124	.182	.281	.433	.619	.839	1.149	1.499
	.141	-.103	-.102	-.097	-.088	-.075	-.044	-.012	.020	.061	.110	.166	.260	.408	.588	.802	1.080	1.324
	.242	-.104	-.104	-.100	-.093	-.080	-.054	-.025	.005	.043	.088	.141	.228	.374	.544	.743	.982	1.180
	.367	-.106	-.103	-.100	-.095	-.085	-.061	-.036	-.010	.024	.067	.116	.198	.330	.484	.667	.881	1.050
	.492	-.103	-.102	-.100	-.097	-.087	-.068	-.045	-.022	.009	.046	.093	.165	.284	.430	.604	.781	.943
	.617	-.103	-.102	-.100	-.096	-.091	-.072	-.051	-.031	-.004	.029	.072	.140	.253	.396	.555	.710	.877
	.805	-.105	-.103	-.100	-.096	-.087	-.077	-.059	-.041	-.017	.011	.052	.115	.226	.355	.491	.644	.817
	.953	-.100	-.101	-.097	-.096	-.086	-.072	-.053	-.040	-.023	.001	.030	.082	.178	.292	.456	.618	.771
.875	.054	-.100	-.098	-.094	-.082	-.069	-.037	-.003	.033	.072	.122	.182	.275	.413	.614	.832	1.111	1.370
	.141	-.102	-.101	-.097	-.085	-.073	-.044	-.013	.018	.057	.106	.161	.252	.397	.572	.764	.963	1.172
	.242	-.101	-.099	-.094	-.088	-.073	-.050	-.021	.005	.042	.087	.139	.220	.353	.501	.657	.840	1.028
	.367	-.102	-.099	-.098	-.089	-.077	-.057	-.033	-.011	.021	.057	.103	.173	.283	.411	.559	.733	.902
	.492	-.104	-.101	-.099	-.095	-.084	-.063	-.044	-.025	-.004	.026	.064	.124	.223	.344	.483	.638	.798
	.617	-.102	-.101	-.099	-.094	-.084	-.065	-.044	-.029	-.013	.008	.044	.095	.193	.306	.439	.585	.744
	.805	-.104	-.101	-.099	-.094	-.082	-.061	-.046	-.035	-.019	-.009	.028	.076	.162	.273	.390	.532	.694
	.953	-.102	-.101	-.099	-.096	-.085	-.064	-.046	-.035	-.022	-.009	.018	.064	.151	.252	.372	.503	.663

NACA

TABLE II.- SPAN LOAD DISTRIBUTION, NORMAL FORCE, AND CENTER OF PRESSURE OF WING

(a) Wing 1; M=2.44; R=0.44x10^6 per inch

	c_n, section normal-force coefficients															$\bar{x}/c$, section center of pressure															Entire wing			
	Upper surface					Lower surface					Both surfaces					Upper surface					Lower surface					Both surfaces					C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
α \ y/s	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875				
3°	0.026	0.033	0.043	0.063	0.061	0.030	0.035	0.043	0.056	0.056	0.056	0.068	0.086	0.119	0.137	0.455	0.411	0.381	0.379	0.407	0.460	0.433	0.416	0.447	0.486	0.458	0.422	0.399	0.411	0.456	0.077	0.002	0.653	0.389
6°	.047	.078	.097	.135	.151	.070	.080	.094	.118	.120	.117	.158	.191	.247	.271	.474	.385	.388	.421	.438	.466	.442	.449	.463	.494	.469	.419	.415	.440	.459	.166	.003	.656	.381
10°	.074	.108	.151	.176	.183	.131	.145	.168	.188	.199	.205	.253	.313	.364	.382	.471	.381	.413	.417	.431	.469	.449	.458	.473	.499	.463	.440	.436	.451	.466	.273	.006	.658	.370
15°	.102	.156	.187	.197	.196	.285	.241	.263	.290	.308	.330	.397	.448	.487	.504	.462	.411	.427	.438	.450	.475	.459	.468	.465	.505	.471	.440	.451	.465	.484	.406	.009	.653	.363
20°	.136	.191	.198	.201	.199	.341	.352	.373	.402	.483	.467	.543	.571	.603	.682	.460	.438	.440	.437	.447	.477	.466	.475	.492	.508	.472	.456	.463	.473	.484	.539	.018	.658	.358
25°	.156	.205	.205	.205	.199	.479	.482	.498	.588	.539	.635	.687	.703	.787	.738	.473	.442	.445	.435	.455	.484	.474	.483	.501	.513	.476	.464	.472	.482	.497	.683	.015	.652	.343
30°	.178	.209	.206	.204	.197	.688	.638	.654	.655	.675	.806	.847	.848	.859	.878	.446	.444	.443	.437	.428	.483	.483	.488	.504	.510	.475	.473	.477	.488	.497	.836	.020	.651	.337
35°	.195	.208	.200	.196	.187	.782	.889	.776	.780	.798	.977	1.037	.976	.976	.985	.447	.441	.440	.439	.443	.485	.484	.492	.505	.514	.477	.475	.488	.490	.501	.954	.025	.650	.331
40°	.205	.208	.199	.185	.188	.881	1.025	.965	.881	.904	1.086	1.233	1.164	1.066	1.092	.449	.443	.443	.433	.446	.508	.480	.508	.503	.523	.498	.474	.497	.490	.510	1.159	.027	.677	.338
45°	.210	.208	.198	.196	.193	.967	1.217	1.257	1.065	1.037	1.177	1.425	1.455	1.261	1.230	.448	.445	.444	.437	.445	.514	.460	.518	.516	.525	.508	.452	.506	.504	.518	1.350	.009	.668	.340
50°	.210	.207	.199	.196	.198	.972	1.345	1.551	1.438	1.319	1.188	1.552	1.750	1.634	1.517	.447	.446	.444	.435	.445	.554	.441	.503	.519	.580	.535	.448	.494	.509	.511	1.582	-.014	.673	.358

(b) Wing 1; M=3.36; R=0.85x10^6 per inch

	c_n, section normal-force coefficient															x/c, section center of pressure															Entire wing			
	Upper surface					Lower surface					Both surfaces					Upper surface					Lower surface					Both surfaces					C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
α \ y/s	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875	0.085	0.250	0.500	0.750	0.875				
3°	0.023	0.027	0.036	0.044	0.046	0.022	0.028	0.033	0.047	0.054	0.045	0.055	0.069	0.091	0.100	0.473	0.420	0.444	0.441	0.461	0.409	0.413	0.350	0.395	0.467	0.442	0.417	0.399	0.417	0.464	0.061	0.008	0.646	0.389
6°	.038	.046	.061	.073	.076	.053	.063	.071	.096	.113	.091	.109	.132	.169	.189	.454	.412	.425	.435	.447	.424	.422	.354	.424	.441	.437	.418	.404	.426	.443	.119	.004	.642	.380
10°	.055	.078	.091	.103	.106	.109	.122	.137	.165	.185	.164	.194	.228	.268	.291	.440	.411	.423	.425	.450	.441	.433	.440	.440	.468	.447	.427	.433	.434	.458	.206	.006	.646	.378
15°	.068	.088	.104	.117	.119	.197	.212	.227	.261	.289	.265	.300	.331	.378	.408	.440	.425	.426	.427	.444	.445	.440	.446	.457	.472	.449	.432	.440	.443	.461	.311	.011	.643	.361
20°	.081	.099	.109	.122	.128	.313	.318	.340	.371	.408	.394	.417	.449	.493	.536	.437	.425	.420	.429	.431	.456	.458	.462	.478	.480	.451	.446	.450	.461	.474	.431	.016	.642	.351
25°	.094	.108	.119	.129	.131	.436	.453	.470	.501	.536	.530	.561	.589	.630	.667	.439	.438	.427	.432	.446	.457	.460	.468	.483	.483	.454	.452	.460	.473	.476	.576	.020	.642	.344
30°	.106	.107	.117	.125	.124	.608	.592	.609	.632	.656	.714	.699	.726	.757	.780	.442	.419	.427	.419	.436	.454	.466	.476	.491	.498	.458	.460	.468	.461	.483	.719	.028	.641	.339
35°	.104	.108	.117	.127	.125	.738	.777	.760	.768	.782	.842	.885	.877	.895	.907	.449	.419	.426	.426	.436	.450	.488	.485	.498	.500	.449	.482	.477	.488	.491	.872	.027	.646	.337
40°	.097	.100	.108	.118	.118	.761	1.048	.981	.910	.913	.858	1.148	1.089	1.028	1.031	.437	.423	.419	.427	.436	.479	.512	.491	.504	.500	.474	.504	.483	.495	.500	1.017	.006	.663	.340
45°	.104	.106	.114	.124	.124	.862	1.325	1.089	1.039	1.028	.966	1.431	1.203	1.163	1.149	.440	.428	.429	.430	.443	.494	.514	.497	.507	.515	.466	.508	.490	.499	.507	1.200	-.001	.667	.338

(c) Wing 2; M=2.46; R=0.44x10^6 per inch

	c_n, section normal-force coefficients												$\bar{x}/c$, section center of pressure												Entire wing			
	Upper surface				Lower surface				Both surfaces				Upper surface				Lower surface				Both surfaces				C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
α \ y/s	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750				
3°	0.030	0.044	0.052	0.053	0.030	0.043	0.046	0.044	0.060	0.087	0.098	0.097	0.411	0.385	0.470	0.448	0.385	0.405	0.488	0.449	0.398	0.415	0.450	0.448	0.085	0.004	0.632	0.364
6°	.052	.076	.088	.083	.078	.096	.110	.118	.131	.172	.198	.201	.407	.405	.462	.448	.411	.427	.459	.460	.411	.415	.449	.453	.173	.008	.637	.364
10°	.058	.126	.133	.136	.143	.177	.205	.236	.201	.303	.338	.368	.405	.436	.455	.445	.431	.430	.446	.449	.419	.434	.446	.446	.308	.018	.641	.363
15°	.128	.150	.160	.155	.205	.291	.331	.371	.333	.441	.491	.526	.405	.441	.440	.443	.443	.432	.445	.452	.428	.437	.446	.453	.456	.027	.642	.359
20°	.150	.187	.184	.186	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25°	.170	.202	.206	.200	.508	.568	.618	.661	.678	.770	.824	.861	.403	.443	.444	.453	.456	.441	.448	.461	.448	.443	.448	.461	.779	.083	.648	.349
30°	.184	.217	.213	.208	.716	.709	.764	.809	.900	.926	.977	1.017	.404	.443	.447	.447	.456	.457	.467	.465	.446	.453	.459	.468	.945	.034	.641	.343
35°	.196	.226	.222	.215	.900	.863	.908	.950	1.096	1.089	1.130	1.165	.405	.445	.450	.449	.460	.457	.473	.478	.454	.456	.468	.473	1.111	.040	.641	.339
40°	.197	.217	.213	.197	1.039	1.019	1.044	1.069	1.236	1.236	1.257	1.266	.405	.446	.447	.447	.467	.469	.475	.479	.457	.462	.470	.476	1.245	.046	.642	.335
45°	.211	.225	.220	.207	1.065	1.155	1.165	1.151	1.276	1.380	1.385	1.358	.412	.446	.449	.450	.483	.495	.498	.498	.472	.468	.477	.474	1.404	.087	.654	.333

(d) Wing 2; M=3.36; R=0.85x10^6 per inch

	c_n, section normal-force coefficients												$\bar{x}/c$, section center of pressure												Entire wing			
	Upper surface				Lower surface				Both surfaces				Upper surface				Lower surface				Both surfaces				C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
α \ y/s	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750	0.085	0.250	0.500	0.750				
3°	0.028	0.053	0.033	0.034	0.028	0.030	0.034	0.030	0.043	0.063	0.067	0.064	0.373	0.457	0.459	0.458	0.374	0.414	0.438	0.456	0.373	0.437	0.448	0.454	0.060	0.003	0.630	0.355
6°	.043	.060	.058	.057	.054	.074	.084	.079	.097	.134	.140	.136	.386	.457	.449	.450	.385	.449	.448	.456	.385	.448	.448	.453	.128	.003	.633	.353
10°	.061	.080	.080	.077	.113	.151	.177	.170	.174	.231	.258	.247	.389	.453	.440	.430	.400	.449	.453	.458	.395	.456	.449	.448	.226	.020	.634	.350
15°	.087	.107	.105	.104	.206	.256	.257	.306	.293	.363	.362	.410	.388	.448	.447	.447	.413	.453	.458	.458	.404	.459	.446	.448	.364	.023	.635	.356
20°	.094	.111	.111	.109	.386	.390	.449	.477	.480	.501	.560	.586	.384	.450	.450	.447	.443	.443	.450	.453	.413	.446	.446	.448	.510	.028	.639	.357
25°	.105	.118	.118	.115	.460	.531	.508	.639	.565	.649	.626	.754	.383	.446	.448	.430	.486	.453	.453	.458	.415	.446	.449	.458	.669	.038	.639	.355
30°	.108	.121	.121	.119	.635	.658	.770	.863	.743	.813	.891	.982	.382	.447	.445	.438	.433	.450	.457	.463	.427	.451	.453	.459	.832	.055	.640	.350
35°	.107	.115	.117	.113	.856	.851	.886	.949	.963	.966	.983	1.062	.377	.447	.481	.488	.458	.459	.464	.471	.446	.458	.459	.469	.994	.048	.639	.348
40°	.110	.120	.119	.115	1.001	1.041	1.104	1.183	1.111	1.161	1.223	1.298	.379	.443	.490	.487	.458	.463	.471	.476	.450	.461	.460	.471	1.175	.040	.644	.342

NACA

TABLE II.- SPAN LOAD DISTRIBUTION, NORMAL FORCE, AND CENTER OF PRESSURE OF WING - Continued

(e) Wing 3; M=2.46; R=0.44×10[6] per inch

α \ y/s	c_n, section normal-force coefficient: Upper surface 0.025	0.250	0.563	0.875	Lower surface 0.025	0.250	0.563	0.875	Both surfaces 0.025	0.250	0.563	0.875	$\bar{x}/c$, section center of pressure: Upper surface 0.025	0.250	0.563	0.875	Lower surface 0.025	0.250	0.563	0.875	Both surfaces 0.025	0.250	0.563	0.875	Entire wing: C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
3°	0.034	0.040	0.040	0.027	0.043	0.049	0.050	0.036	0.077	0.089	0.090	0.063	0.395	0.449	0.451	0.344	0.435	0.446	0.449	0.364	0.417	0.447	0.450	0.355	0.079	0.005	0.430	0.460
6°	.075	.081	.083	.069	.102	.113	.114	.086	.177	.194	.197	.148	.419	.449	.452	.373	.450	.451	.452	.381	.437	.450	.452	.383	.175	.011	.438	.463
10°	.119	.126	.129	.098	.188	.202	.206	.160	.307	.328	.335	.250	.427	.452	.450	.400	.458	.450	.455	.406	.446	.451	.453	.404	.300	.017	.443	.464
15°	.161	.167	.166	.142	.334	.341	.347	.277	.495	.508	.513	.419	.423	.452	.439	.428	.467	.455	.454	.413	.455	.454	.453	.418	.469	.026	.444	.465
20°	.185	.183	.183	.167	.518	.511	.517	.422	.703	.696	.700	.589	.418	.446	.451	.440	.472	.441	.449	.422	.458	.447	.449	.427	.648	.037	.443	.465
25°	.207	.202	.200	.188	.726	.698	.694	.576	.933	.900	.894	.764	.413	.445	.433	.445	.456	.430	.432	.426	.446	.453	.432	.431	.838	.055	.434	.463
30°	.216	.209	.210	.201	.956	.854	.850	.728	1.172	1.063	1.060	.929	.411	.446	.436	.449	.456	.428	.427	.429	.460	.430	.429	.435	1.005	.067	.432	.461
35°	.226	.222	.221	.213	1.125	1.010	1.005	.886	1.351	1.232	1.226	1.099	.410	.446	.433	.449	.475	.439	.435	.439	.464	.437	.436	.438	1.167	.070	.440	.463
40°	.226	.222	.219	.213	1.297	1.176	1.141	1.022	1.483	1.398	1.360	1.235	.411	.445	.432	.449	.502	.448	.445	.445	.488	.448	.443	.446	1.304	.063	.459	.464

(f) Wing 3; M=3.36; R=0.85×10[6] per inch

α \ y/s	c_n, section normal-force coefficient: Upper surface 0.025	0.250	0.563	0.875	Lower surface 0.025	0.250	0.563	0.875	Both surfaces 0.025	0.250	0.563	0.875	$\bar{x}/c$, section center of pressure: Upper surface 0.025	0.250	0.563	0.875	Lower surface 0.025	0.250	0.563	0.875	Both surfaces 0.025	0.250	0.563	0.875	Entire wing: C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
3°	0.032	0.038	0.034	0.029	0.020	0.032	0.038	0.029	0.052	0.070	0.072	0.058	0.405	0.485	0.506	0.467	0.291	0.428	0.407	0.333	0.361	0.454	0.454	0.383	0.063	0.006	0.430	0.459
6°	.054	.054	.055	.048	.072	.090	.090	.074	.126	.144	.145	.122	.393	.476	.461	.417	.383	.447	.439	.387	.387	.457	.447	.399	.132	.009	.433	.472
10°	.078	.078	.080	.069	.146	.172	.173	.147	.224	.250	.253	.216	.375	.460	.444	.404	.410	.453	.451	.412	.398	.455	.448	.409	.230	.015	.436	.473
15°	.098	.097	.098	.089	.274	.296	.296	.254	.350	.393	.394	.343	.379	.459	.441	.419	.433	.455	.455	.422	.418	.456	.452	.421	.361	.021	.442	.475
20°	.106	.101	.104	.098	.401	.439	.441	.378	.507	.540	.545	.476	.361	.448	.429	.419	.451	.456	.458	.428	.432	.455	.452	.426	.502	.027	.445	.472
25°	.117	.111	.119	.107	.599	.619	.632	.532	.716	.730	.744	.639	.369	.450	.433	.425	.463	.455	.457	.434	.448	.454	.453	.432	.685	.035	.449	.470
30°	.122	.115	.116	.112	.819	.822	.824	.698	.941	.937	.940	.810	.368	.451	.435	.427	.463	.447	.447	.437	.452	.447	.446	.436	.874	.048	.445	.467

(g) Wing 4; M=2.46; R=0.44×10[6] per inch

α \ y/s	c_n, section normal-force coefficient: Upper surface 0.025	0.250	0.500	0.750	0.875	Lower surface 0.025	0.250	0.500	0.750	0.875	Both surfaces 0.025	0.250	0.500	0.750	0.875	$\bar{x}/c$, section center of pressure: Upper surface 0.025	0.250	0.500	0.750	0.875	Lower surface 0.025	0.250	0.500	0.750	0.875	Both surfaces 0.025	0.250	0.500	0.750	0.875	Entire wing: C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
3°	0.029	0.035	0.045	0.072	0.093	0.051	0.037	0.058	0.056	0.060	0.060	0.072	0.083	0.128	0.153	0.460	0.427	0.415	0.358	0.400	0.475	0.440	0.488	0.445	0.488	0.468	0.434	0.448	0.393	0.435	0.079	0.000	0.664	0.392
6°	.053	.070	.096	.135	.149	.071	.082	.091	.109	.118	.124	.152	.187	.244	.267	.467	.402	.378	.397	.424	.463	.451	.449	.459	.477	.482	.488	.413	.425	.447	.166	.003	.655	.386
10°	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15°	.106	.171	.192	.201	.205	.230	.246	.257	.282	.296	.336	.417	.449	.483	.499	.478	.425	.434	.482	.436	.480	.463	.469	.479	.497	.479	.447	.454	.453	.472	.413	.008	.654	.359
20°	.134	.188	.197	.207	.204	.351	.361	.372	.394	.415	.485	.549	.569	.601	.619	.453	.440	.435	.481	.438	.484	.478	.478	.490	.502	.475	.461	.463	.466	.461	.544	.012	.658	.349
25°	.166	.204	.205	.228	.208	.494	.497	.498	.514	.582	.660	.701	.703	.726	.740	.443	.450	.440	.482	.440	.485	.479	.485	.497	.502	.474	.471	.472	.475	.485	.694	.017	.651	.340
30°	.187	.211	.207	.214	.211	.642	.652	.687	.698	.650	.829	.863	.894	.882	.881	.447	.451	.438	.425	.440	.489	.485	.493	.500	.507	.480	.477	.479	.481	.491	.843	.020	.651	.334
35°	.200	.211	.207	.214	.212	.810	.842	.774	.769	.772	1.010	1.053	.981	.983	.984	.452	.450	.441	.426	.442	.492	.488	.498	.505	.509	.484	.486	.466	.488	.495	1.009	.023	.658	.329
40°	.209	.211	.207	.216	.222	.986	1.035	.984	.896	.881	1.135	1.246	1.191	1.118	1.095	.453	.450	.443	.427	.443	.505	.480	.517	.509	.514	.495	.475	.504	.493	.500	1.183	.015	.656	.331
45°	.212	.213	.208	.216	.213	.956	1.289	1.263	1.088	1.023	1.168	1.442	1.471	1.304	1.236	.452	.449	.443	.427	.442	.551	.477	.514	.519	.515	.517	.496	.504	.504	.502	1.360	.003	.660	.342
50°	.185	.186	.195	.199	.207	.886	1.323	1.540	1.429	1.333	1.071	1.509	1.735	1.628	1.540	.572	.558	.567	.584	.554	.566	.431	.495	.528	.511	.564	.447	.505	.521	.517	1.475	-.038	.684	.364

(h) Wing 4; M=3.36; R=0.85×10[6] per inch

α \ y/s	c_n, section normal-force coefficient: Upper surface 0.025	0.250	0.500	0.750	0.875	Lower surface 0.025	0.250	0.500	0.750	0.875	Both surfaces 0.025	0.250	0.500	0.750	0.875	$\bar{x}/c$, section center of pressure: Upper surface 0.025	0.250	0.500	0.750	0.875	Lower surface 0.025	0.250	0.500	0.750	0.875	Both surfaces 0.025	0.250	0.500	0.750	0.875	Entire wing: C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
6°	.037	.050	.065	.081	.083	.061	.066	.076	.095	.110	.098	.116	.141	.174	.193	.468	.410	.408	.413	.457	.444	.426	.420	.408	.440	.451	.419	.414	.407	.447	0.126	0.004	0.646	0.380
10°	.075	.072	.091	.105	.112	.115	.128	.134	.158	.161	.188	.194	.225	.263	.258	.474	.407	.400	.405	.433	.451	.439	.434	.430	.456	.456	.427	.420	.420	.447	.206	.007	.644	.370
15°	.069	.091	.109	.122	.124	.231	.217	.231	.257	.264	.250	.308	.339	.379	.408	.463	.415	.407	.412	.435	.458	.452	.451	.457	.478	.459	.441	.437	.443	.461	.319	.011	.644	.377
20°	.081	.100	.115	.127	.138	.331	.324	.339	.363	.395	.412	.424	.454	.490	.527	.430	.417	.406	.418	.439	.462	.461	.461	.471	.476	.460	.451	.447	.457	.467	.439	.016	.648	.348
25°	.098	.107	.120	.134	.137	.492	.456	.460	.489	.510	.584	.563	.579	.617	.647	.454	.422	.409	.420	.442	.464	.470	.470	.482	.484	.462	.464	.456	.469	.475	.585	.022	.642	.339
30°	.099	.109	.121	.133	.136	.643	.612	.616	.618	.641	.772	.721	.737	.751	.777	.458	.424	.408	.419	.441	.465	.476	.478	.492	.494	.463	.468	.467	.479	.485	.747	.029	.641	.332
35°	.103	.112	.126	.136	.137	.815	.770	.768	.771	.779	.918	.892	.894	.907	.917	.450	.426	.412	.422	.445	.490	.489	.485	.499	.499	.466	.461	.475	.487	.491	.901	.020	.658	.332
40°	.105	.111	.123	.135	.137	.843	1.008	.923	.970	1.013	.948	1.119	1.016	1.105	1.150	.452	.424	.412	.421	.445	.492	.517	.492	.498	.496	.485	.508	.488	.489	.490	1.036	.003	.669	.339
45°	.108	.137	.129	.141	.149	.773	1.380	1.053	1.153	1.179	.892	1.457	1.181	1.274	1.324	.455	.428	.427	.425	.445	.496	.499	.499	.507	.499	.491	.495	.490	.491	.495	1.189	-.025	.698	.347

TABLE II.- SPAN LOAD DISTRIBUTION, NORMAL FORCE, AND CENTER OF PRESSURE OF WING - Concluded

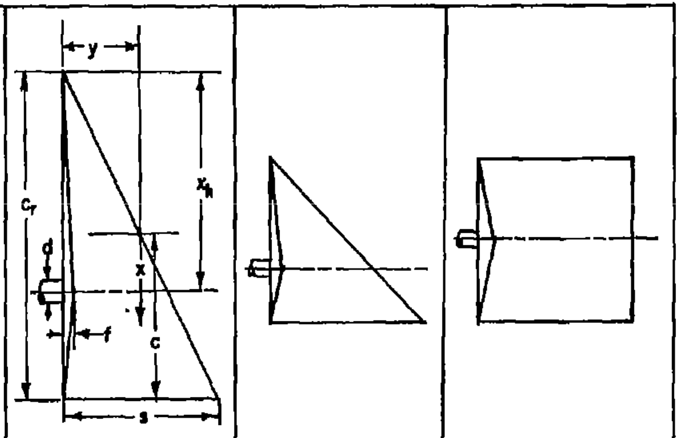
(i) Wing 5; M=2.46; R=0.44×10^6 per inch

	c_n, section normal-force coefficient												$\bar{x}/c$, section center of pressure												Entire wing			
	Upper surface				Lower surface				Both surfaces				Upper surface				Lower surface				Both surfaces				C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
α \ y/s	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875				
3°	0.044	0.045	0.044	0.033	0.050	0.049	0.048	0.043	0.094	0.094	0.092	0.076	0.460	0.462	0.456	0.386	0.464	0.452	0.458	0.467	0.462	0.457	0.457	0.432	0.084	0.005	0.443	0.451
6°	.079	.078	.077	.058	.109	.109	.107	.079	.188	.187	.184	.137	.459	.454	.448	.387	.469	.459	.459	.383	.465	.457	.454	.385	.168	.009	.445	.453
10°	.122	.122	.118	.093	.206	.206	.202	.156	.328	.328	.320	.249	.462	.454	.445	.401	.470	.461	.453	.400	.467	.458	.450	.400	.295	.016	.446	.456
15°	.158	.156	.152	.128	.359	.354	.348	.282	.517	.510	.500	.410	.460	.447	.438	.421	.473	.463	.452	.421	.469	.458	.448	.421	.466	.024	.449	.460
20°	.178	.172	.169	.146	.543	.531	.514	.435	.721	.703	.683	.581	.454	.443	.433	.430	.477	.459	.447	.423	.471	.455	.444	.425	.644	.034	.447	.461
25°	.194	.188	.185	.165	.748	.730	.703	.610	.942	.918	.888	.775	.454	.444	.435	.439	.465	.447	.436	.428	.463	.446	.436	.430	.842	.049	.442	.462
30°	.198	.190	.189	.174	.954	.892	.873	.798	1.152	1.082	1.062	.987	.447	.444	.432	.441	.455	.445	.438	.438	.454	.445	.437	.439	1.016	.059	.442	.465
35°	.211	.203	.202	.185	1.191	1.048	1.035	.987	1.402	1.251	1.237	1.172	.453	.447	.436	.443	.468	.451	.444	.441	.466	.450	.443	.441	1.198	.062	.448	.466
40°	.213	.206	.205	.191	1.330	1.222	1.178	1.175	1.543	1.428	1.383	1.366	.454	.445	.434	.442	.490	.457	.451	.439	.485	.455	.448	.439	1.354	.062	.454	.469

(j) Wing 5; M=3.36; R=0.85×10^6 per inch

	c_n, section normal-force coefficient												$\bar{x}/c$, section center of pressure												Entire wing			
	Upper surface				Lower surface				Both surfaces				Upper surface				Lower surface				Both surfaces				C_N	C_m	$\bar{x}/c_r$	$\bar{y}/s$
α \ y/s	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875	0.025	0.250	0.563	0.875				
3°	0.028	0.031	0.032	0.025	0.035	0.038	0.037	0.029	0.063	0.069	0.069	0.054	0.468	0.443	0.420	0.389	0.454	0.447	0.431	0.356	0.460	0.445	0.426	0.371	0.062	0.005	0.426	0.464
6°	.050	.056	.056	.045	.078	.083	.083	.072	.128	.139	.139	.117	.455	.439	.424	.386	.468	.455	.442	.404	.463	.449	.435	.397	.127	.008	.435	.469
10°	.074	.078	.078	.068	.156	.159	.159	.136	.230	.237	.237	.204	.458	.441	.429	.399	.468	.454	.444	.414	.465	.450	.439	.409	.220	.013	.440	.468
15°	.097	.097	.099	.090	.280	.282	.284	.245	.377	.379	.383	.335	.453	.428	.423	.415	.479	.460	.450	.429	.472	.452	.443	.425	.356	.019	.446	.469
20°	.106	.106	.109	.102	.436	.431	.434	.378	.542	.537	.543	.480	.450	.427	.424	.423	.478	.461	.453	.433	.473	.454	.447	.431	.506	.026	.449	.469
25°	.110	.111	.114	.109	.618	.615	.609	.525	.728	.726	.723	.634	.442	.425	.422	.421	.482	.466	.455	.436	.476	.460	.450	.433	.676	.032	.458	.467
30°	.116	.115	.118	.111	.864	.834	.810	.696	.980	.949	.928	.807	.442	.426	.424	.421	.482	.462	.448	.436	.477	.458	.445	.434	.877	.043	.451	.463
35°	.116	.116	.119	.114	1.074	1.029	1.006	.976	1.190	1.145	1.125	1.090	.440	.429	.424	.422	.475	.452	.446	.441	.472	.450	.444	.439	1.064	.055	.449	.464

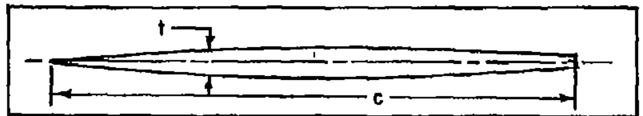
Plan form view



Model	Wing 1 *Wing 4	Wing 2	Wing 3 *Wing 5

*Wings having duplicate plan forms but mounted on turntable and without thickened root section

A	2	4	2
c_r in	8	4	4
s in	4	4	4
x_h/c_r	.667	.667	.500
S in^2	16	8	16
d in	.875	.625	.625
f in	.250	.350	.400



x/c	0.00	.100	.200	.300	.400	.500	.600	.700	.800	.900	1.000
t/c	.000	.018	.032	.042	.048	.050	.049	.046	.041	.034	.025

	Root chord fillet ordinate t/c_r		
x/c_r	Wing 1	Wing 2	Wing 3
0.00	0.000	0.000	0.000
.10	.025	.038	.046
.20	.048	.072	.085
.30	.068	.102	.119
.40	.085	.126	.143
.50	.099	.144	.156
.60	.107	.155	.145
.70	.106	.152	.124
.80	.086	.122	.097
.90	.059	.081	.063
1.00	.025	.025	.025

Typical root chord fillet fairing

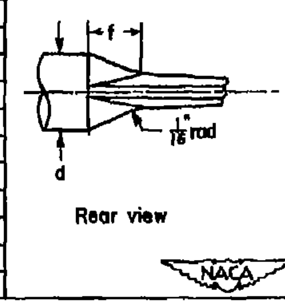
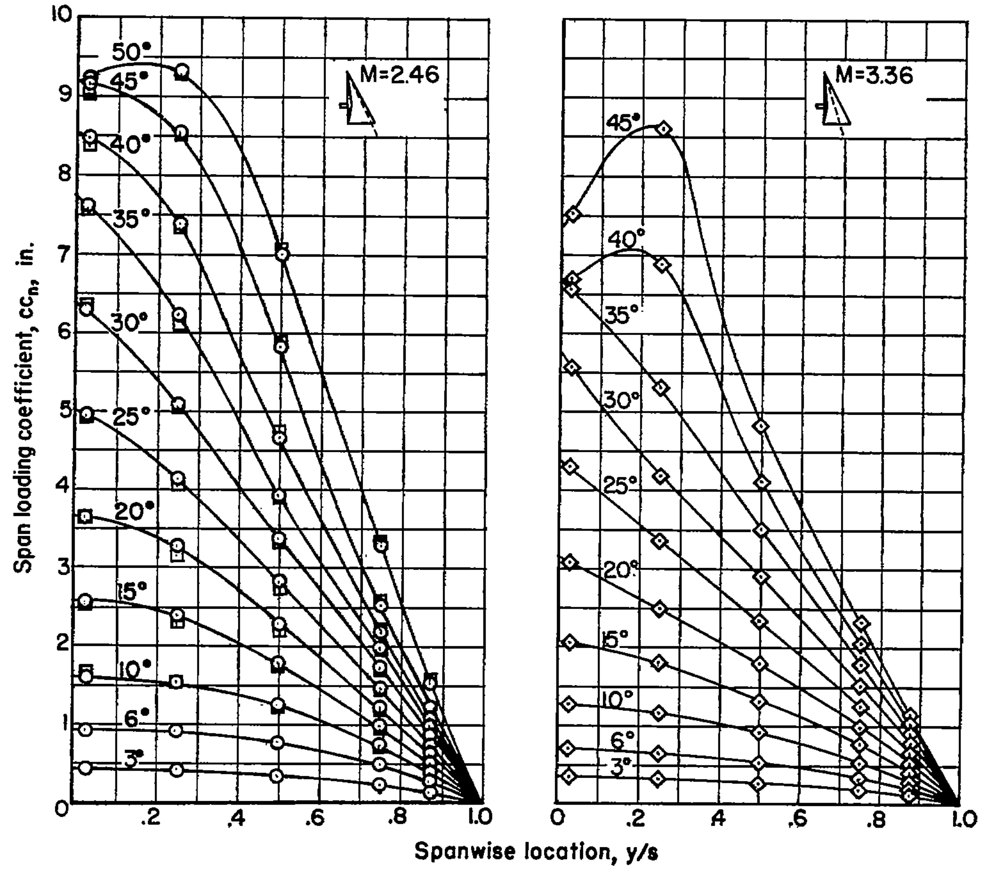
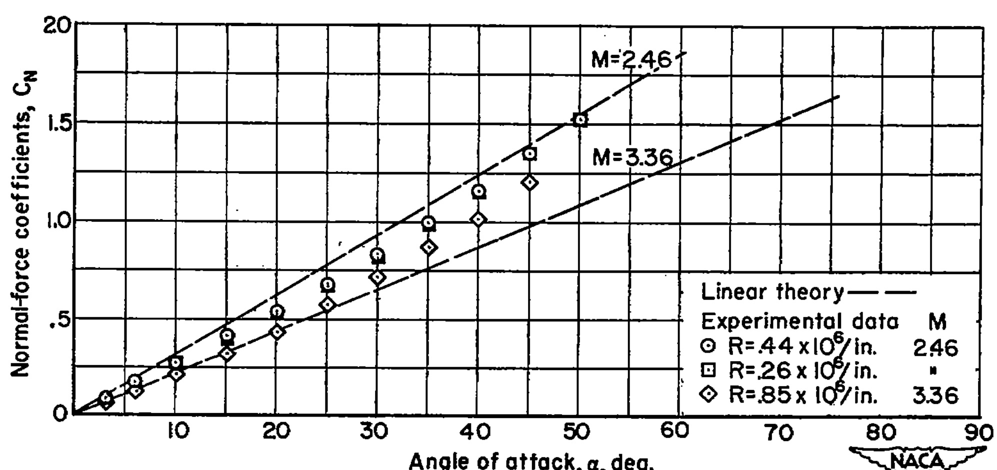


Figure 1.- Wing dimensions and identity.

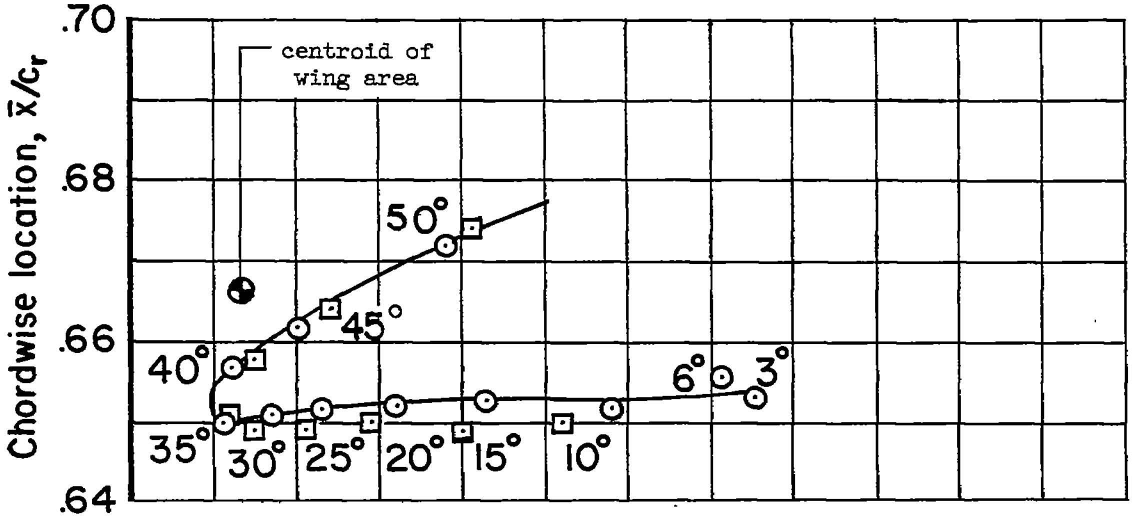


(a) Span loading.

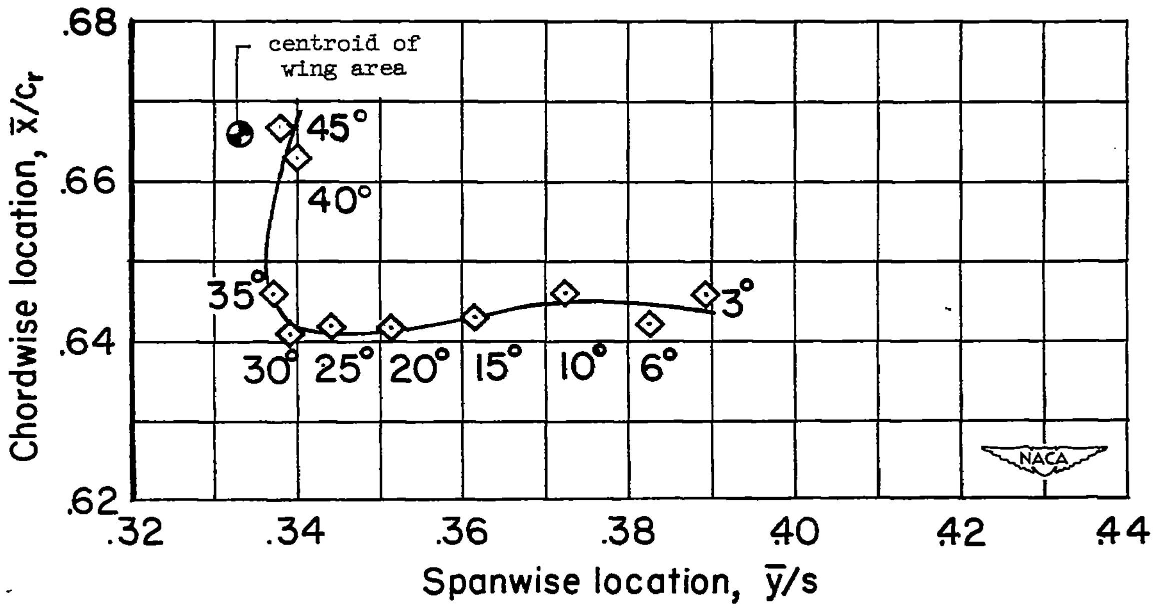


(b) Normal force.

Figure 2.- Aerodynamic characteristics of wing 1.

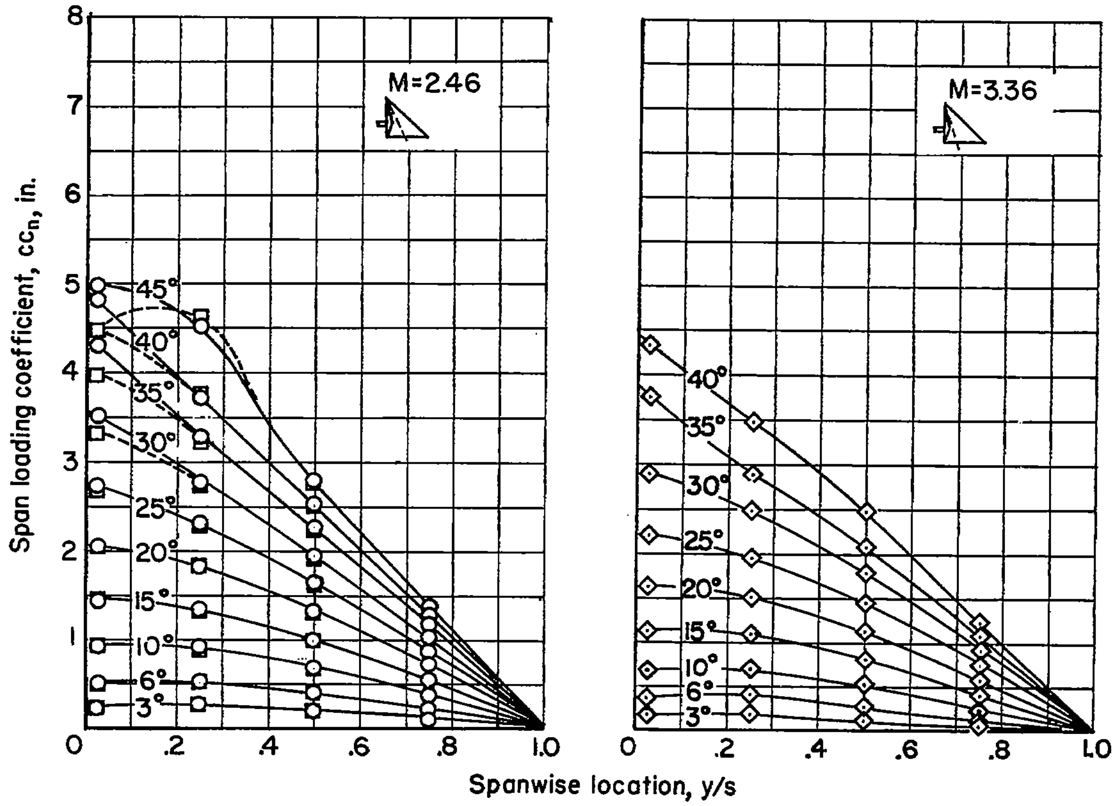


(c) Center-of-pressure position; M= 2.46.

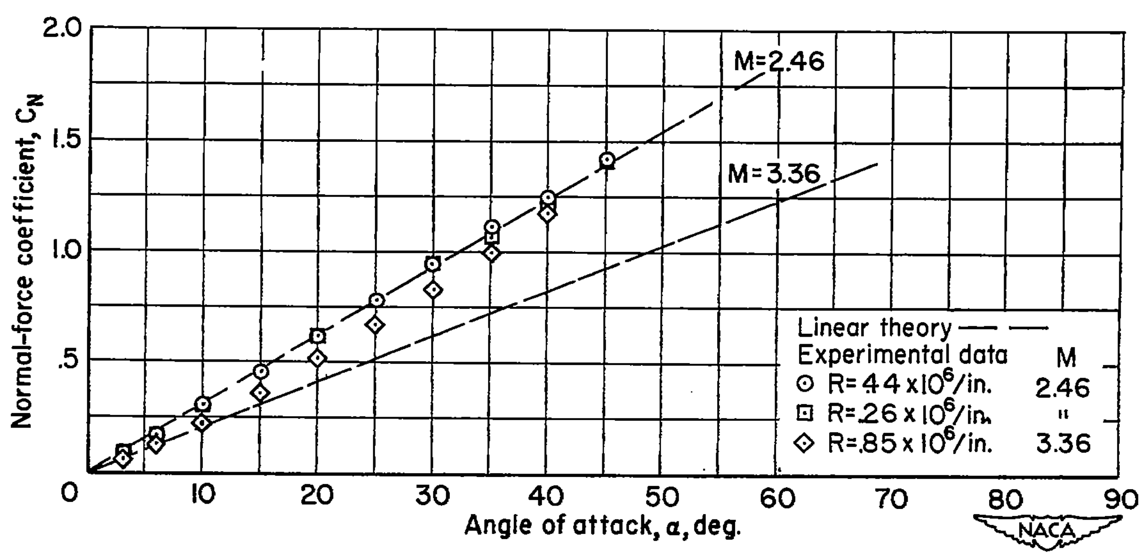


(d) Center-of-pressure position; M = 3.36.

Figure 2.- Concluded.

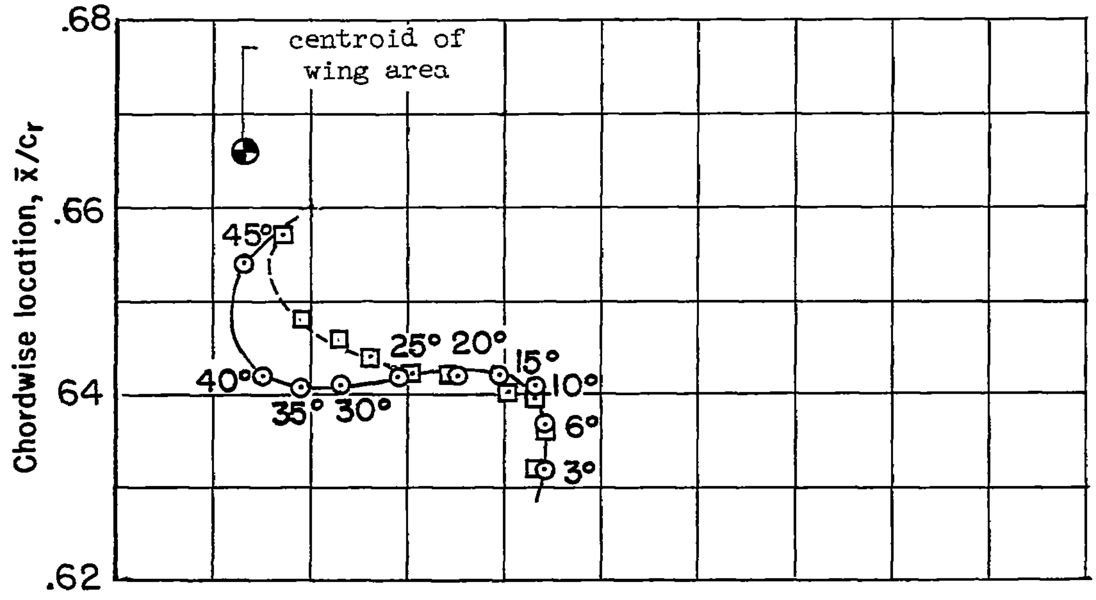


(a) Span loading.

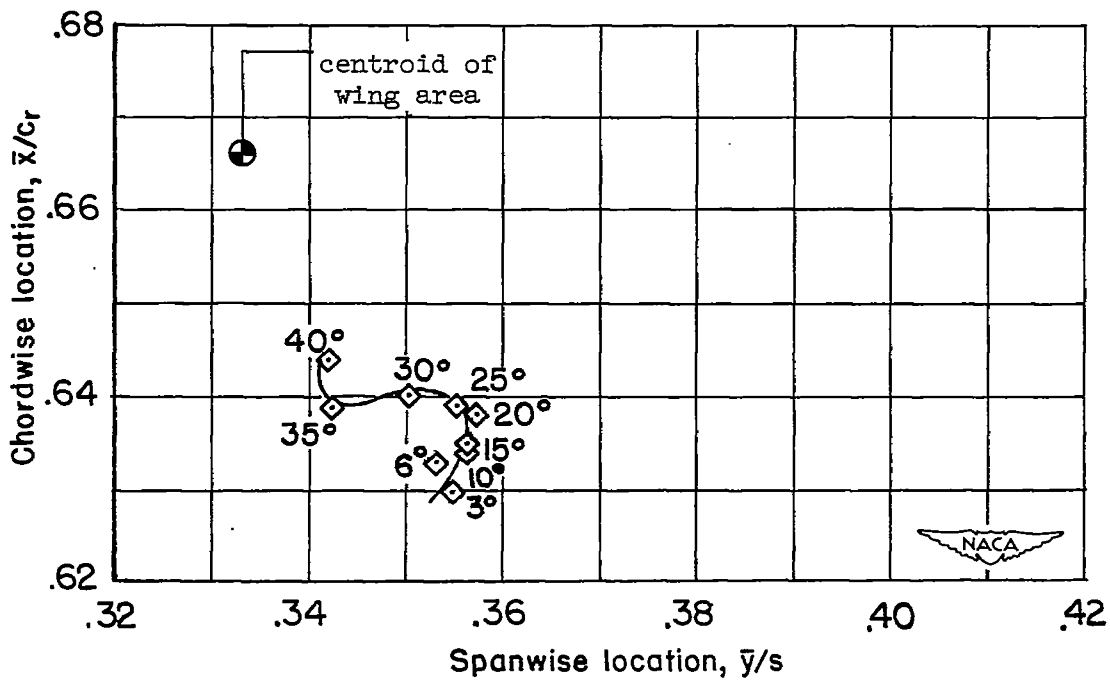


(b) Normal force.

Figure 3.- Aerodynamic characteristics of wing 2.

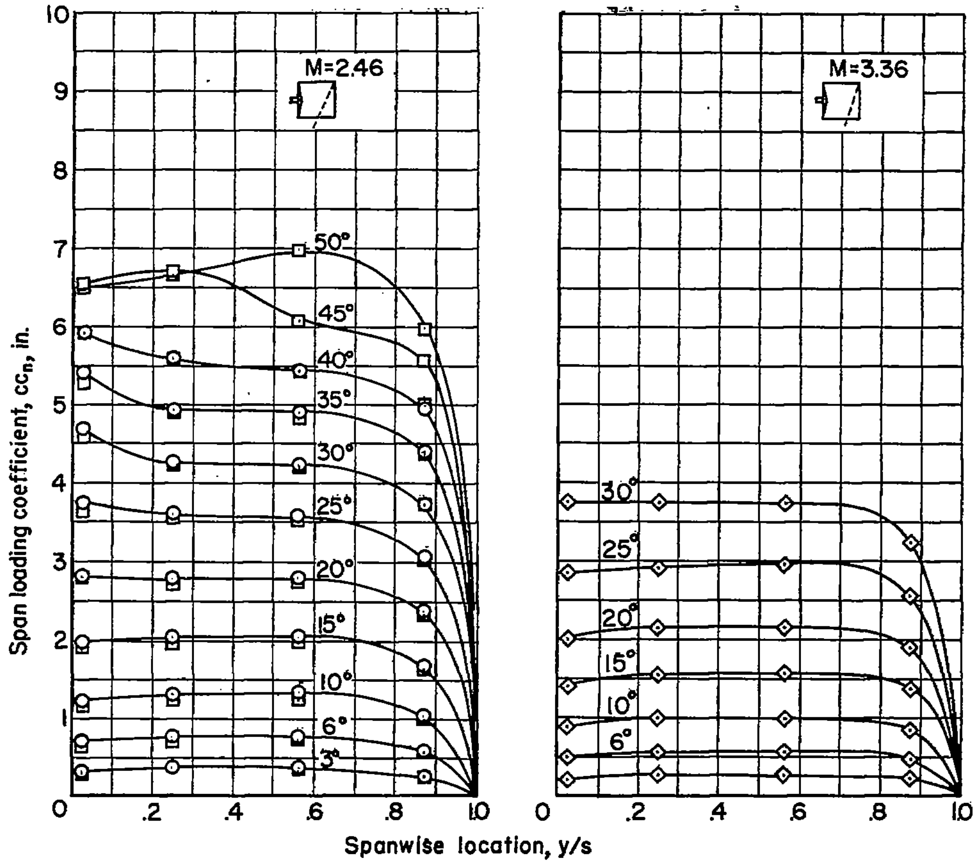


(c) Center-of-pressure position; M = 2.46.

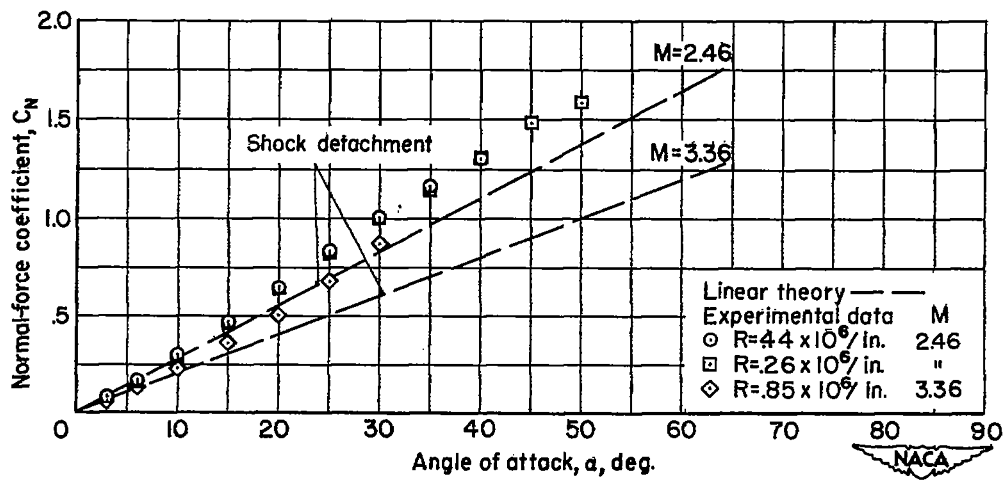


(d) Center-of-pressure position; M = 3.36.

Figure 3.- Concluded.

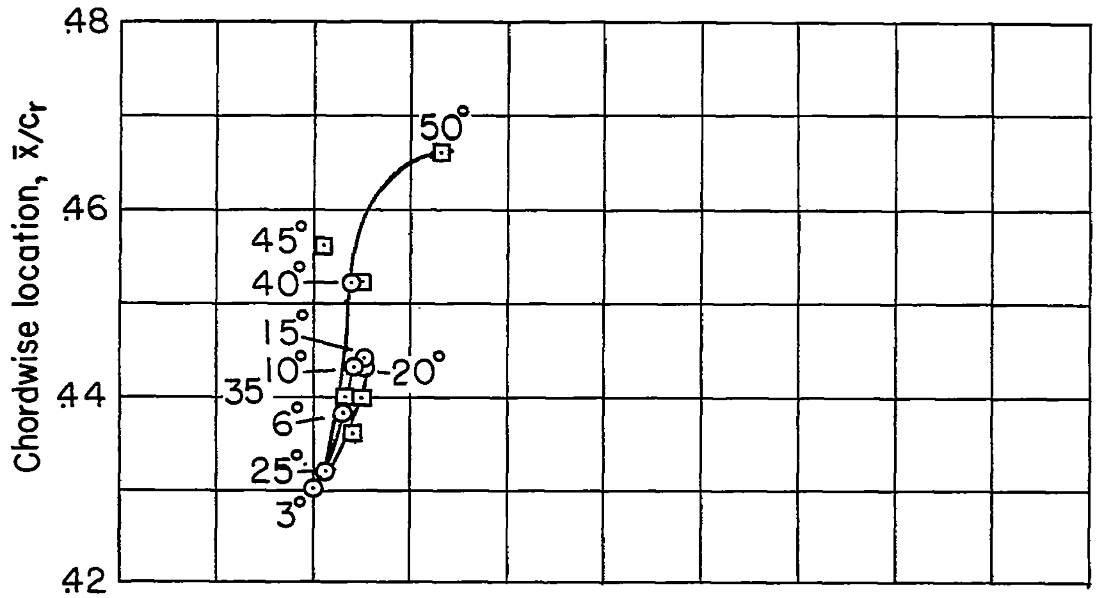


(a) Span loading.

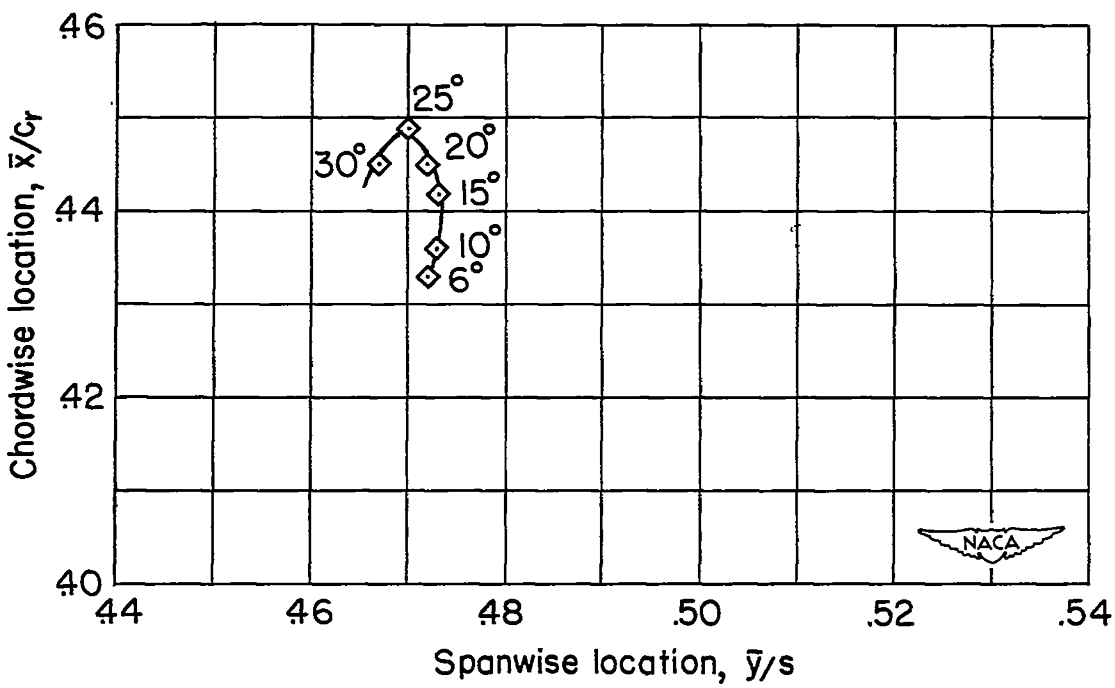


(b) Normal force.

Figure 4.- Aerodynamic characteristics of wing 3.

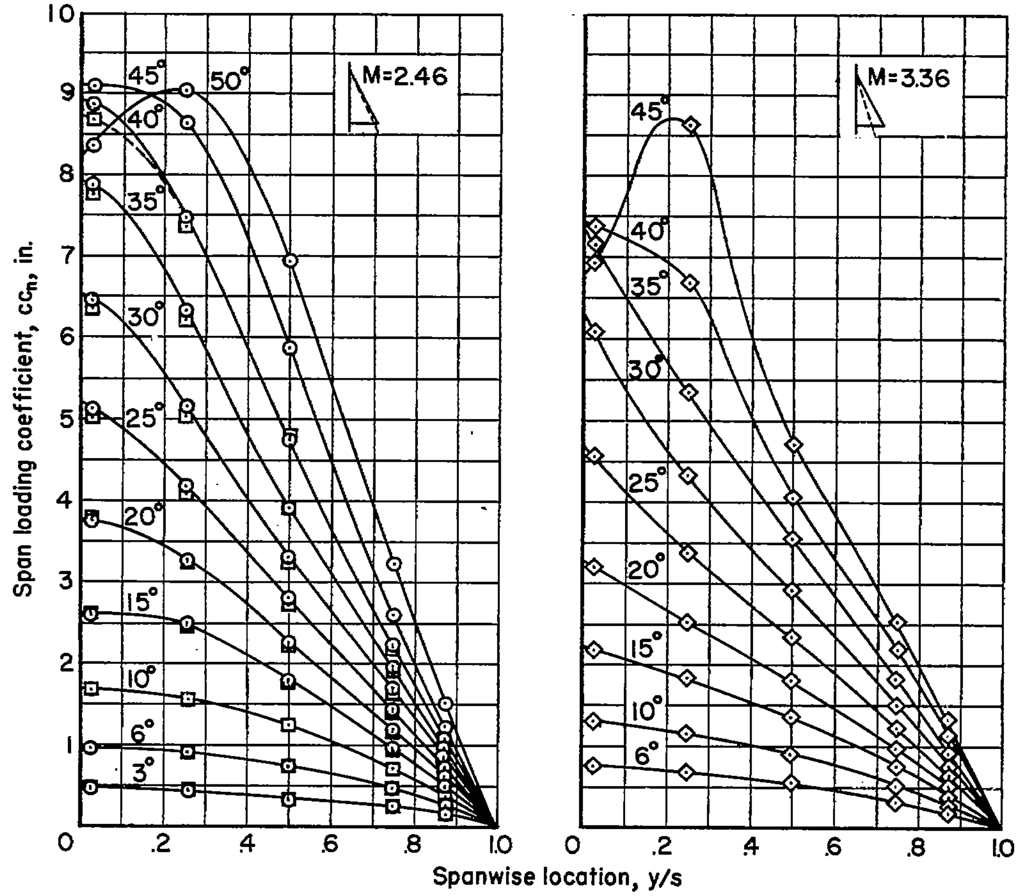


(c) Center-of-pressure position; M = 2.46.

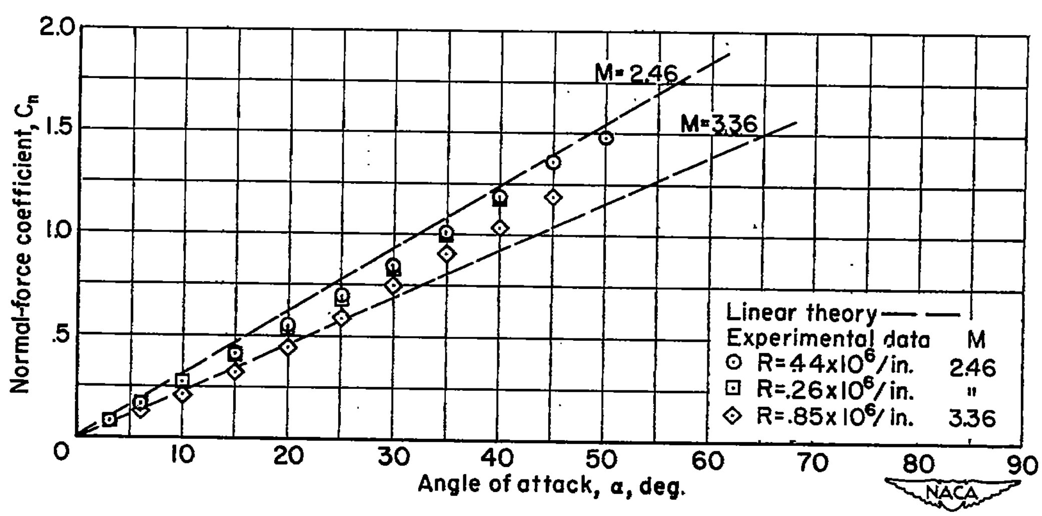


(d) Center-of-pressure position; M = 3.36.

Figure 4.- Concluded.

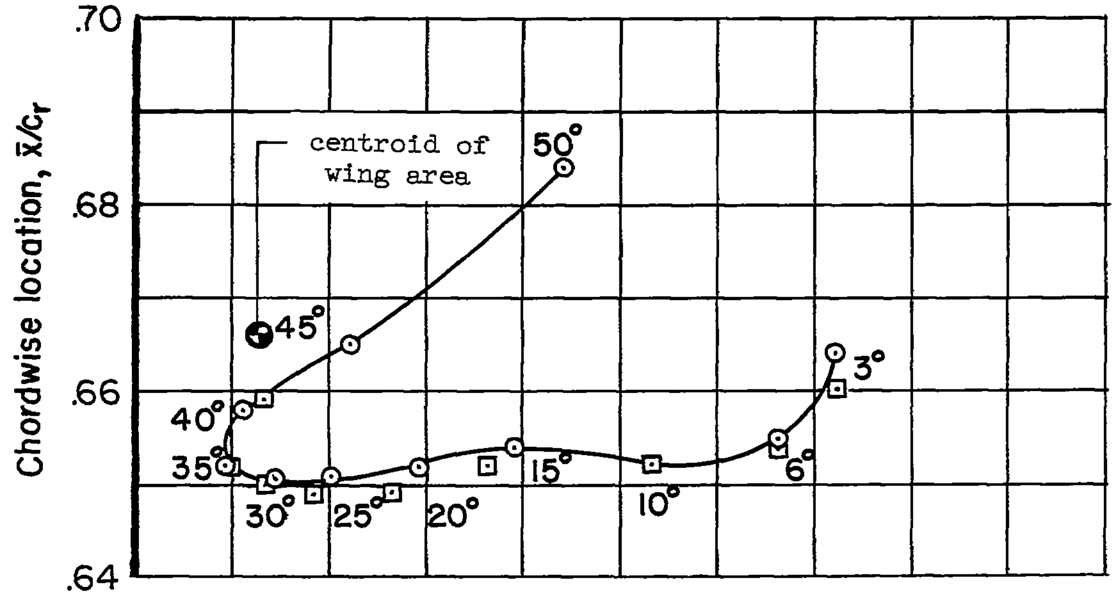


(a) Span loading.

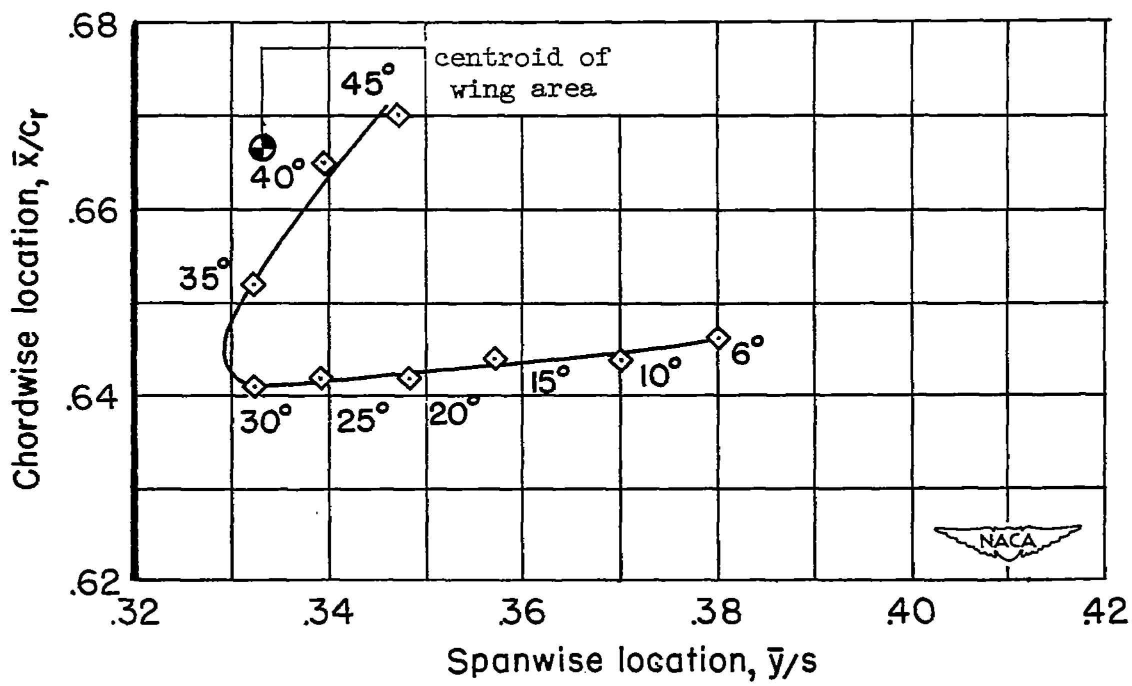


(b) Normal force.

Figure 5.- Aerodynamic characteristics of wing 4.

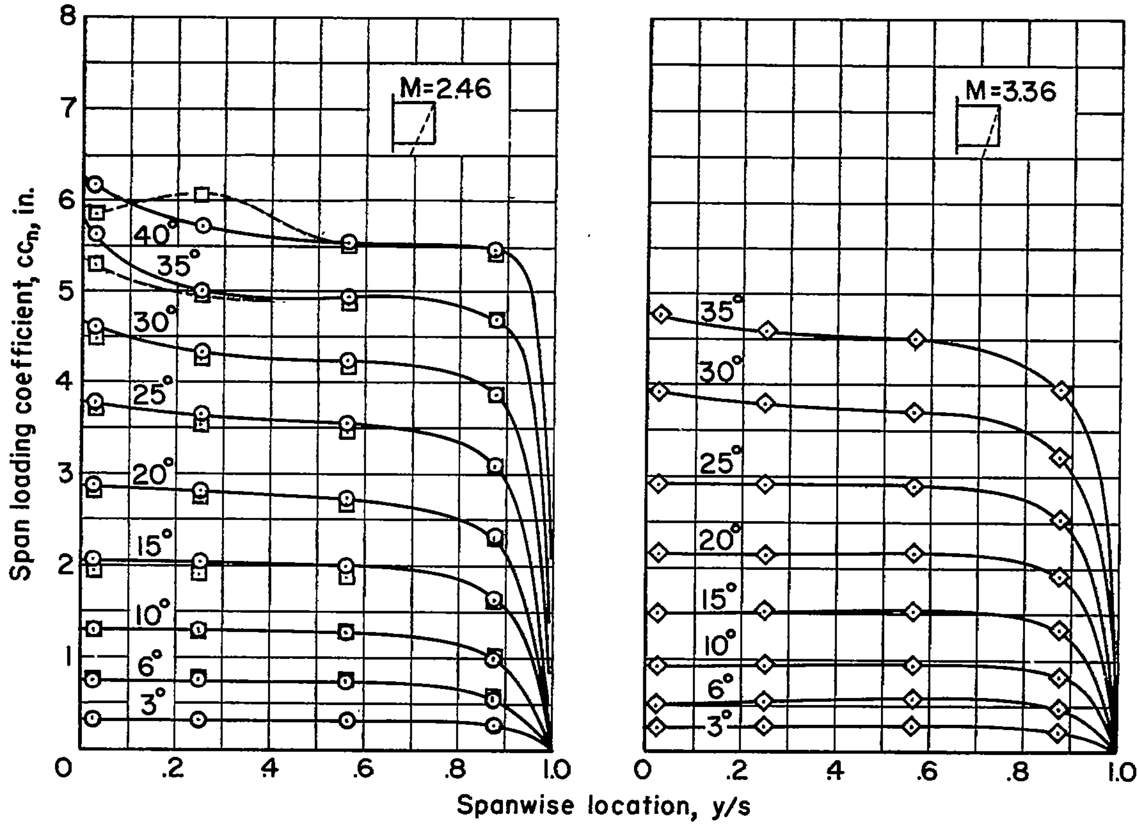


(c) Center-of-pressure position; M = 2.46.

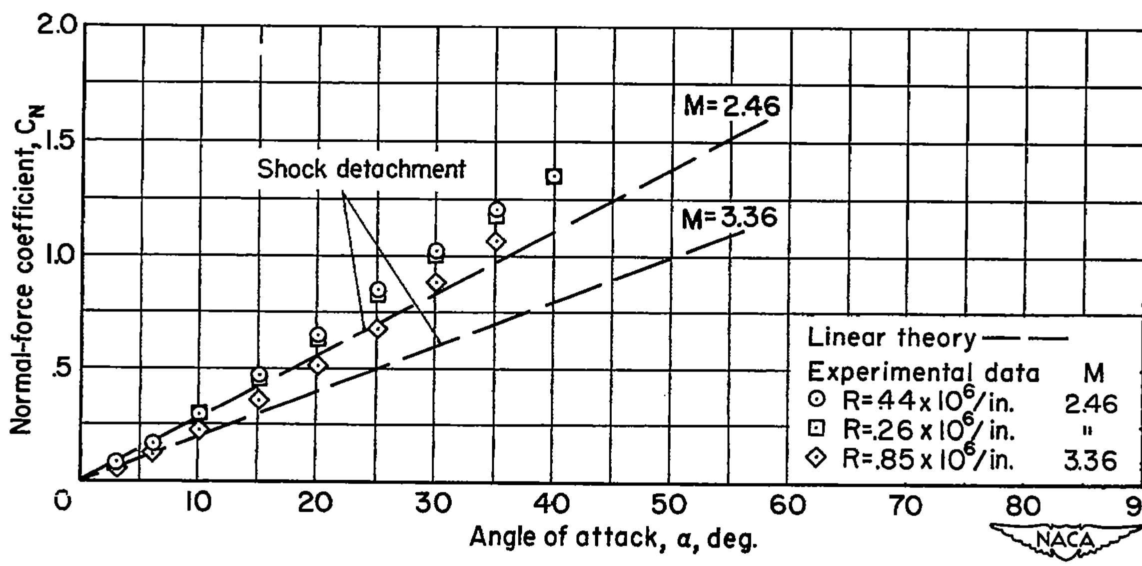


(d) Center-of-pressure position; M = 3.36.

Figure 5.- Concluded.

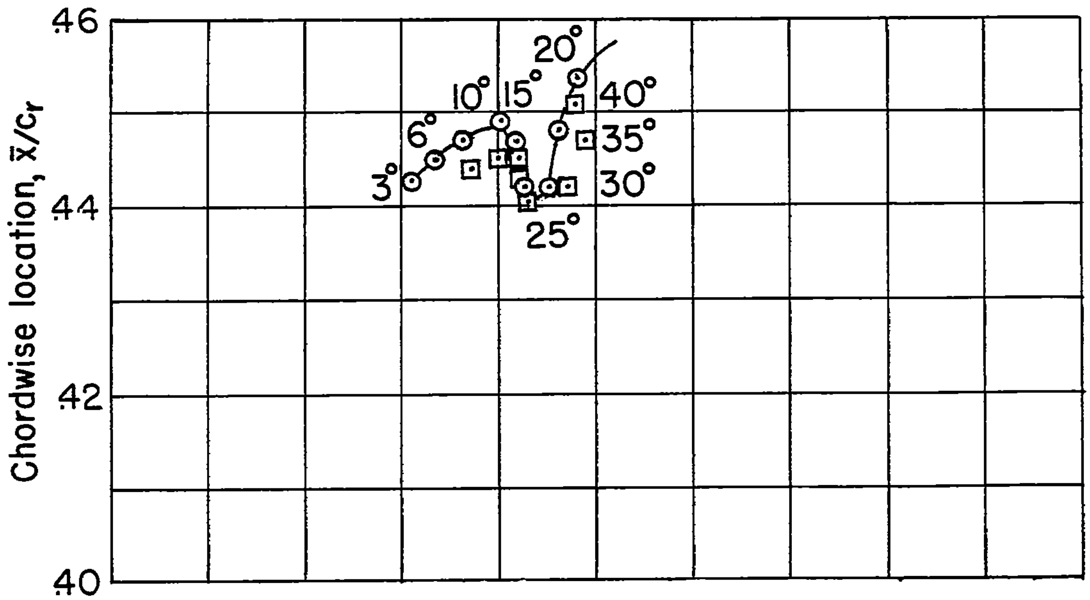


(a) Span loading.

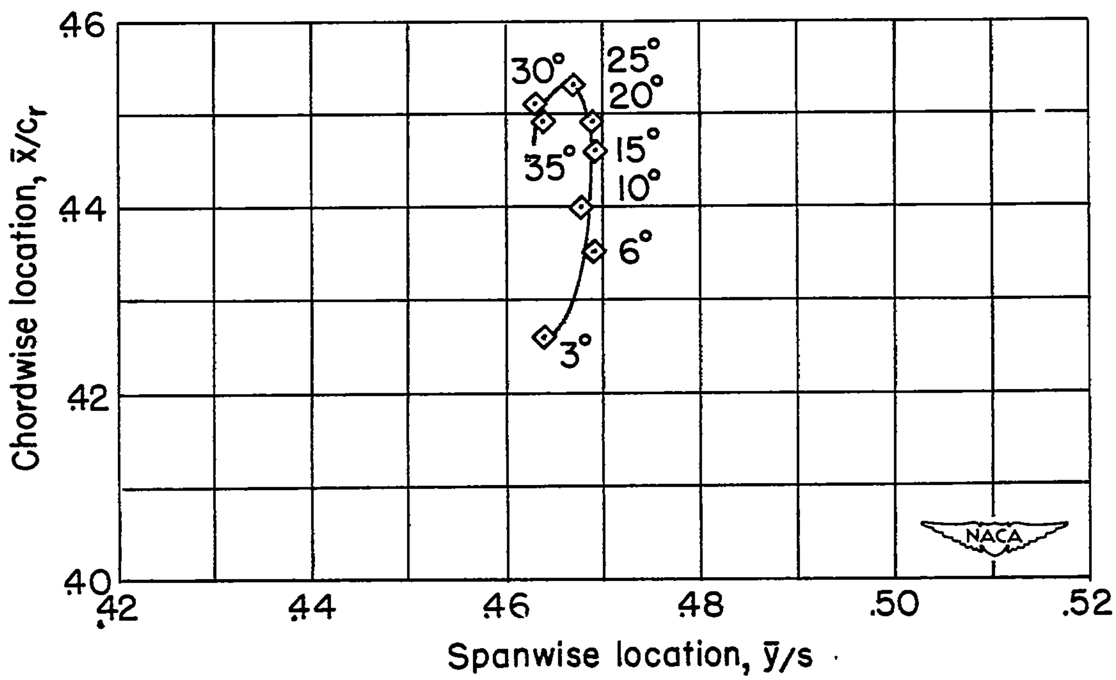


(b) Normal force.

Figure 6.- Aerodynamic characteristics of wing 5.

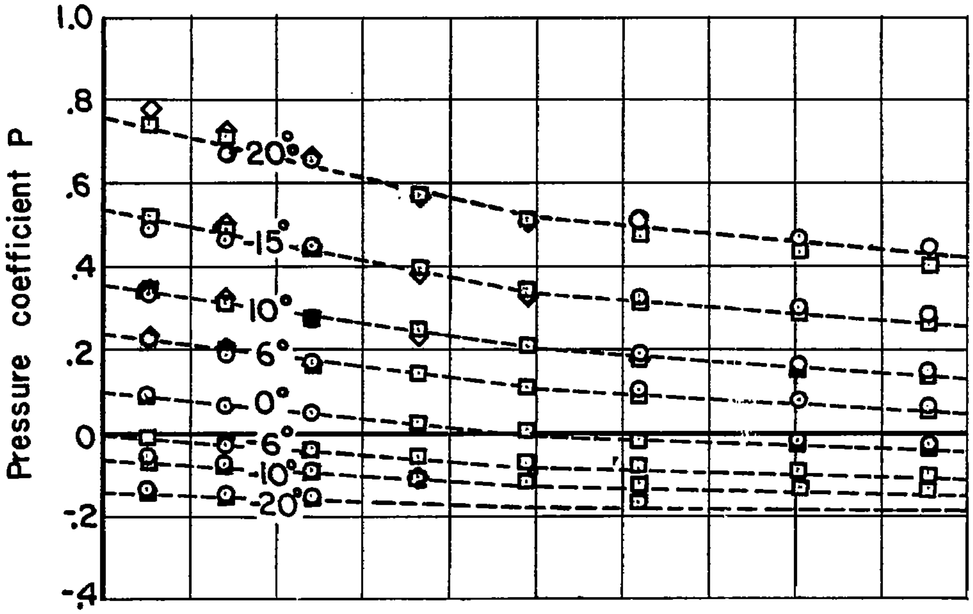


(c) Center-of-pressure position; M = 2.46.

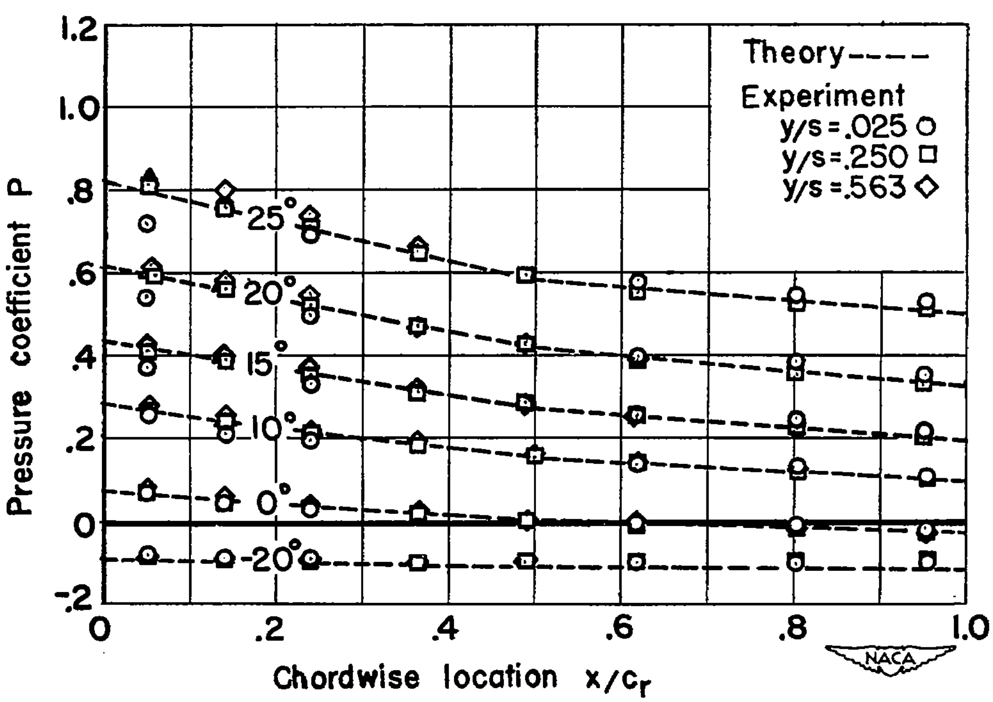


(d) Center-of-pressure position; M = 3.36.

Figure 6.- Concluded.



(a) M = 2.46.



(b) M = 3.36.

Figure 7.- Comparison of experimental chordwise pressure distribution with shock-expansion-theory values for the two-dimensional-flow region of wing 5.